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SOME FACTORS OF VETERINARY INTEREST AFFECTING THE COMPOSITION OF COWS' MILK*

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There has been a slow, but steadily progressive, fall in the average compositional quality of cows' milk over the last 30 or more years. For practical purposes milk can be considered to be composed of fat and solids-not-fat (S.N.F.), the latter grouping consisting of the protein, lactose and ash. The fat is present as minute globules in a true emulsion, the protein is combined with calcium, and is in colloidal suspension, the lactose is in true solution, and the minerals forming the ash are either combined with the protein, or are in suspension or solution. Since about 1920 (Bartlett & Kay, 1950) the fall in average composition has been from the neighbourhood of 3·75 per cent. of fat to about 3·55 per cent., and in non-fatty solids from 8·90 to 8·65 per cent. or less. This fall in fat and solids-not-fat percentage is, in effect, an increase in the proportion of water in the milk, but it has been proved that it is not due to increased adulteration. The Sale of Milk Regulations of 1939 state that where a sample of whole milk contains less than 3 per cent. of fat or 8·5 per cent. of other solids it shall be presumed, until the contrary is proved, to be not genuine by reason of the abstraction therefrom of milk fat or other solids or the addition thereto of water.

The most important factor in determining the composition of the milk a cow will yield is undoubtedly the breed, although individual animals may yield milk markedly above or below the average. In general, the breeds yielding milk with a high fat content have a high non-fatty solids content also, and vice versa, but there are individuals which are high in one and low in the other. In most cows there is a decline in quality with advancing age, but the rate of decline is very irregular and it has been suggested that it is associated with the higher incidence of mastitis in older cows.

It is now considered probable that nutrition has a marked influence on milk composition, but its effect is still not properly understood, and it is a subject which is receiving considerable attention from research workers at the present time. Gross underfeeding of cows reduces the solids-not-fat percentage of milk (Rowland, 1946), and the low percentage encountered in certain herds in March and April before the cows are turned out to grass is probably due to the cumulative effect of a long period of poor winter feeding. The decrease in solids-not-fat which occurs in certain areas in July and August is most marked in hot dry weather when the herbage is scarce and of low feeding value, and is also mainly of nutritional origin. Conversely, fresh spring grass exercises a remarkably stimulating effect on the non-fatty solids content of milk (Bartlett & Kay, 1950), and this is specially noticeable when the milk has fallen abnormally low in late winter. If the diet of heavy milking cows contains very little fibre the milk fat frequently will be depressed. Such a condition sometimes occurs when cows are grazing lush spring pasture, particularly when this is supplemented with cake or meals. Experimentally (McClymont, 1950), grazing cows on a limited area of succulent pasture and feeding concentrates, and, when the pastures were eaten out, feeding 5 lb. of silage per cow per day plus concentrates, or grazing on leafy oats plus concentrates, depressed the fat yielded by as much as 30 or 40 per cent. In field cases, and experimentally, the feeding of coarse roughage as hay or chaff has been found to prevent or correct low butter-fat percentages.

The day-to-day variations in the composition of the milk yielded by individual cows may be very great in fat percentage, and detectable, though less marked, in solids-not-fat. The causes of these variations are not understood, and it is not possible to predict when they are likely to occur. Some of the factors responsible are of direct veterinary interest, and for this reason will be considered here, although their influence may not be as important as those causes previously mentioned.

The two main factors affecting the fat percentage of milk, apart from the genetic make-up of the individual and the diet, are udder pressure and the differences between the fat content of the first and last milk withdrawn at a milking. They have very little effect on the solids-not-fat percentage. Udder pressure is very important, for the formation of milk causes it to rise and this tends to inhibit the actual secretory process, in order to prevent the pressure rising still more. It also alters the ease with which the fat globules pass down the ducts, for pressure on the duct walls retards their progress. The whole structure of the cow's udder appears to be designed for the relief of pressure on the secretory alveolar cells (Hammond, 1936), for the thin elastic skin, producing an udder which "shrinks away to nothing" after the milk is withdrawn, and which expands easily as milk is secreted into it, is a mechanism for keeping the internal milk pressure in the udder as low as possible, compatible with the accommodation of a large volume of milk, while the provision of a large milk cistern to each quarter relieves pressure on the actual secreting cells; moreover, should these mechanisms fail to keep the milk pressure in the alveoli below that which is harmful to the mammary cells, the sphincter muscle of the teat provides a safety valve by which the pressure can be reduced by the leaking of milk from the udder as is seen in the case of cows which have been "stocked" for sale.

The effect of udder pressure is demonstrated in practice by the fact that on most farms the yield of milk in the morning is higher, but its fat percentage is lower, than in the evening because the interval between the evening and the morning milking is greater than the interval during the day, and therefore the udder pressure is highest in the morning. It is because it prevents a high udder pressure being attained that for high yielding cows milking three or four times in 24 hours gives, in some individuals, a higher fat percentage as well as a greater yield than twice a day milking. It also is one reason why it is always more difficult to obtain a high fat percentage in the milk of a high yielding cow than of a low producer.

The second factor is the variation in composition between the first and last milk to be withdrawn from the udder. The first pint of milk contains about 1 per cent. of fat, the main

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bulk will contain about 2·5 per cent. and the last half-pint may contain up to 10 per cent. This variation is due to the fact that the larger fat globules move more slowly down the milk ducts than do the other constituents, because their large size causes them to rub against the duct walls. In practice this means that if, for any reason, the strippings are not withdrawn the fat composition of the milk will be lower. This occurs in practice when cows are milked by hand by an inexperienced milker who cannot withdraw the strippings, or when cows are frightened during milking and so hold up part of their milk which will include the strippings. Both these occurrences result in milk with a lower fat percentage than normal being obtained.

Turner (1952) has advanced the following theory to explain the reason why milk secreted when milk pressure is low is high in fat, and also the increasing fat content of milk during the milking process. Within the individual cells the cycle of milk secretion includes a period of synthesis when milk is formed within the cells, followed by the discharge of the milk into the cavity of the alveolus. Following the removal of milk at milking time the cycles of milk secretion and discharge are rapid, filling the lumina of the alveoli, the ducts and storage spaces of the duct system and the gland cistern. With the continued secretion and discharge of milk there is a gradual rise in udder pressure, and this causes a gradual change in the mode of milk secretion. Instead of discharging the products of secretion from the cell by the rupture of the cell membrane, the pressure in the lumen of the alveoli becomes sufficient to prevent the rupture of the cells. The constituents of milk are discharged from the cell only as it is possible for them to pass through the semi-permeable cell membrane. The milk fat which is in suspension in the milk serum cannot leave the cell and as a consequence accumulates within the cell as secretion continues. The other constituents of milk are present in various degrees of solution, and their discharge continues at a reduced rate through the cell wall. Thus the milk secreted when the milk pressure is low is high in fat, but as the interval between milkings lengthens this milk is gradually diluted by the discharge of milk less rich in fat. Therefore as the interval between milkings lengthens the fat content of the total yield of milk is reduced. This theory also explains the reason for the increasing fat content of milk during the milking process and the strippings being especially rich in fat, for upon the release of milk pressure, the cells rich in fat would discharge the accumulation of fat globules. It would also explain why the fat percentage of milk increases with decreasing production, such as advanced lactation or temporary inhibition.

The results of nine tuberculin tests covering 126 cows in two herds were assessed (King, 1950-51). The cows were tuberculin tested in the morning, commencing between 9 a.m. and 10 a.m. in each case, and the herd was to some extent upset by the presence of large numbers of students assisting with the test. The milk yields on the evening of the day of testing were compared with the following evening's milking which was used as a control. At the evening milking on the day of the test the average yield was 12·3 lb. compared with 13·2 lb. the following evening, and the fat percentage was 3·95 compared with 3·55, for the formation of milk during the early part of the day was reduced by the disturbance of tuberculin testing, so the yield was lowered, but, as the cows were at rest during milking, they let down their milk and the reduced yield led to the increased fat percentage. The solids-not-fat percentage remained unchanged.

By comparing 101 samples taken from cows after being driven 300 yards immediately prior to milking, and a similar number of samples taken from the same cows within a week of the earlier sample after resting in a byre for at least 12 hours, it was found that the quiet driving of cows for even short distances tended to increase the fat percentage from 4·05 to 4·45 per cent. without appreciably affecting the quantity yielded, probably because the movement disturbed the fat globules slightly in the ducts and facilitated their removal. The solids-not-fat percentage remained unchanged. The effect of violent exercise, associated of necessity with excitement, was determined on 17 occasions when cattle broke out during an afternoon and were collected after a period of unusually fast exercise. Samples were taken from the 107 animals involved after they had quietened, and compared with samples subsequently collected within a week when the animals were in a normal state. The average yield was reduced from 11·7 to 9·2 lb., the solids-not-fat percentage was lowered from 8·7 to 8·4, and the fat percentage was raised from 4·3 to 5.

The effects of oestrus on milk composition have been studied in 47 cases (King, 1949) and the results can be divided into three distinct classes.

1. In nine cows there was no rise in body temperature, the yield remained constant, and no change in composition was detected.

2. In 31 cows there was a lowered yield and an increase in quality. Owing to the fact that some of the cows came into oestrus during the day and others during the night, results have been expressed as average changes when each observation was compared with a normal milking at the same time during the subsequent week.

(*a*) In 22 cases the body temperature was increased to between 101·5° and 102° F., and the average yield was reduced from 23 to 21¼ lb., the average fat percentage being raised from 3·71 to 3·79. There was no appreciable difference in solids-not-fat percentage.

(*b*) In nine cases the body temperatures rose to between 102° and 103·5° F., and the average yield was reduced from 27 to 24¼ lb., the average fat percentage being increased from 3·42 to 4·52, while the average solids-not-fat percentage was decreased from 8·8 to 8·4.

3. In seven cases showing variable body temperatures there was a reduction in milk yield with a lowered fat percentage, and it appeared that these cows were simply "holding up" their milk during the period of excitement.

In all cases where there was an alteration in yield and composition there was a compensatory change at the first milking after oestrus.

The effects of systemic diseases have been classed as those occurring in cows running temperatures of over 104° F. for at least 24 hours, and those in cows running temperatures between 101·5° and 104° F. Milk samples from 18 cows with temperatures over 104° F. have been studied. In five cases the cows had consumed large quantities of poultry pellets, dairy cubes, or maize flakes, two had acute colic, one was choked with a piece of kale, five others subsequently proved to be foreign body cases, with the initial temperature rise probably occurring at the time of penetration, three were cases of congestion of the lungs, and in the other two cases the cause was not determined. During the acute stage the yield was lowered to from 2 to 4 lb. at a milking, the fat percentage rose to between 7 and 10, and the solids-not-fat percentage dropped to between 5·6 and 7. The subsequent milkings showed a steady return towards the normal expected for the individual. Eight of the cows were affected within 112 days of calving and their yields rose to the levels which had been expected; eight of the cows had been calved over 200 days and were again pregnant, and these did not subsequently attain the yields they had given previously. It appeared that the stimulus to milk production had waned, and that this setback had had a lasting effect.

The remaining two cows were at the end of their lactations, both were giving under 16 lb. daily, and they rapidly dried off. This drying off was undoubtedly accelerated by the indisposition.

Milk samples taken from 43 cows while their temperatures were between 101·5° and 104° F. have been studied. The majority of the cows were suffering from post-operative wounds, principally from rumenotomy operations, or after having had a claw removed. Eleven had acetonaemia, and the others had a variety of minor indispositions. In 29 cases there was a definite reduction in yield from an average of 12¾ lb. to 8¼ lb., the average fat percentage was increased from 3·8 to 5·1, while the average solids-not-fat percentage showed a reduction from 8·7 to 8·2. To some extent the rise in fat percentage appeared to be due to the drop in yield. As the temperatures fell to normal the yield increased and the composition returned to the usual level.

In the other 14 cases, which were of short duration, the yield appeared to remain approximately constant, and the solids-not-fat percentage was unchanged, but the fat percentage showed an average rise from 3·9 to 4·7. This rise may be due to the cow losing weight by shedding her body reserves in the form of butter-fat, but it has not been possible to assess this.

A difficulty always met in research into variations caused by mastitis is to determine what constitutes mastitis. In this work cows showing definite clinical signs of heat and pain in a gland with clots in the milk were classed as having subacute mastitis, and those having definite clots without active glandular changes were considered as chronic cases.

In the hand-milked cows, each quarter was milked and sampled separately. In those milked by machine, the affected quarter was milked by hand and the normal ones by machine. All the samples examined were collected after the systemic symptoms had subsided, so that changes in body temperature should not influence composition.

Eighty-two cases were investigated, of which 69 were in the first instance subacute. Of these, 57 cleared up with treatment and gave no obvious clots in the milk after the initial attack had subsided. In the remaining 12 initially subacute cases further clots were observed and chronic mastitis diagnosed. Of the remaining 13 cases, 11 were always of a chronic nature and never showed acute symptoms, and the other two became subacute from 20 to 30 days after they had been observed initially as chronic cases. In such a small number of cases it has not been possible to classify the results according to the causal organism.

It was found that if a cow were affected with subacute mastitis towards the end of a lactation, its milk yield was lowered appreciably and it tended to dry off more rapidly than normal. In those cases which occurred during the first 60 days of a lactation there did not appear to be an appreciable reduction from the yield expected. In those cases observed in the middle of a lactation, there was a definite drop in yield, but the lactation did not seem to be shortened. It appeared that there was some slightly more noticeable reduction in those cases which did not clear completely.

The analysis of the individual quarter samples showed very constant findings for both subacute and chronic cases. The average yield of the affected quarters was 5·2 lb. compared with 7·3 lb. for the opposite normal quarters, the average fat percentages were 3·32 and 3·77, and the average solids-not-fat percentages 7·84 and 8·81 respectively. Samples examined one month after the initial attack showed that the average yield of the affected quarters was now 6 lb. compared with 6·95 for the normal quarters, that the fat percentages were now at approximately the same level, and that the solids-not-fat percentage was 8·37 for the affected quarters compared with 8·74 for the normal.

When it is considered that the drop in fat percentage in an affected gland is negligible, and the drop in solids-not-fat percentage small, also that the yield of the affected gland is lowered, it can be appreciated that the composition of the milk in all four quarters is not going to be greatly changed, and thus, in the average herd, the effect of a small number of cases of mastitis on the composition of the milk of the herd is negligible.

Research carried out by workers at Shinfield (Kay, 1948) has shown that the average results were that the bulked milk of non-infected cows contained 8·75 per cent. solids-not-fat, and the bulked milk of infected cows 8·63 per cent., a difference of 0·12 per cent. As, in practice, the milk from the cows in the positive group would be mixed with that from the considerably larger negative group, the decrease in the solids-not-fat percentage as a result of mastitis is certainly not greater than 0·05.

Milk secretion was induced artificially in three bovines during the course of infertility treatment conducted by the staff of the Department of Veterinary Surgery. The animals comprised a five-year-old Ayrshire which had calved once two years before, a three-year-old Ayrshire which was mated and conceived, but had an incomplete abortion late in pregnancy with retention of a macerated foetus, and a three-year-old Friesian which had never come into oestrus. The technique was the same in each case. A 1 gramme tablet of stilboestrol was implanted subcutaneously, after which the teats and udder were massaged for five minutes three times a day until the fluid secretion commenced. The tablets were left in for six weeks. At an average of six days after implantation, about 2 c.c. of clear serous fluid were yielded by each fore quarter and 3 c.c. by each hind quarter. At from 14 to 19 days the fluid assumed the appearance of normal colostrum, being of an opaque yellowish colour. The average quantities from each quarter were then 12 c.c. each morning and 7 c.c. each evening, and from the fore quarters 9 c.c. in the morning and 6 c.c. in the evening. The yields then steadily increased and all produced milk which resembled the normal by the 27th day.

Table I

Details of the Yields of Three Cows Producing Milk after Stilboestrol Implantation

Cow	Daily quantity being yielded when secretion was normal milk	Peak daily yield attained	Duration of lactation recorded	Daily yield at end of that time	Total quantity given during the period
	Lb.	Lb.	Days	Lb.	Lb.
5 - year - old Ayrshire ...	1⅜	13½	140	10¼	1,417
3 - year - old Friesian ...	2¼	13½	260	8½	2,798¾
3 - year - old Ayrshire ...	3	16¾	82	16½	903¼

All these cows were discharged before the end of their lactations and their further histories are not available.

Table II

Cow	Fat %			Solids-not-fat %		
	Maximum	Minimum	Average	Maximum	Minimum	Average
5-year-old Ayrshire	5·65	4·2	4·87	10·21	8·62	9·11
3-year-old Friesian	5·15	3·05	4·02	9·78	8·63	8·84
3-year-old Ayrshire	5·8	4·1	4·67	9·71	8·94	9·21

The fat and solids-not-fat percentages were always above the minimum legal standards, and the averages were all above the percentages which would have been expected in a normal lactation. These results compare with those found by Folley & Malpress (1944). The effect of iodinated casein feeding was determined by using material supplied by the Ministry of Agriculture. Twenty grammes of iodinated casein were contained in 4 lb. of dairy cattle cubes, and this iodinated cake was fed to the experimental cows at the rate of 4 lb. per day for six weeks, 3 lb. per day for one week, 2 lb. per day for one week and 1 lb. per day for one week. The control cows received similar amounts of untreated cattle cake in addition to their usual ration. Eight pairs were used, one animal of each pair receiving the iodinated casein and the other the normal cake, and, although it was impossible to draw conclusions from such a small number of animals, there was an average rise in yield of 2 lb. per day and an average rise of 0·38 per cent. fat during the feeding period. There was no rise in the solids-not-fat content.

Experimental work on large numbers of herds (Kay, 1948) has shown that if carefully used on animals past the peak of lactation but not yet heavily in calf, iodinated casein will, over an experimental period of eight weeks, increase milk yields by 22 per cent., and cause a small increase in the fat percentage. This method of feeding, however, has not been considered safe for extensive application, and the animals require more feeding-stuffs than the extra amount which would be given them on the basis of increased milk yield because their general metabolic rate is markedly increased.

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Discussion

Mr. Donaldson, in opening the discussion, praised Mr. King's work and stressed the importance to the profession of the results of the analysis of milk. He remarked that in his experience, in some herds the tuberculin test was followed by a temporary increase in milk secretion.

Mr. Marshall said it was a pity this paper had been given at the end of winter, for the information would have been most useful to him when attending agricultural brains trusts. He asked for more information regarding the effect of gentle exercise, of the effect of hormones on secretion and on the use of iodinated casein. Mr. King, in reply, said his gentle exercise took place over a short distance and was a mechanical assistance to the passage of fat globules along the ducts. Oxytocin stimulated "let down" and after its use there was an increase in both yield and butter-fat. Sampling discrepancies were very likely to bring about irregular results and much care had to be taken—the more tests it was possible to include the greater the reliability of the results. After stilboestrol implantation a honey-like secretion had been obtained in two or three weeks and this rapidly changed to milk which was obtained about a month afterwards. Iodinated casein increased the metabolic rate and the extra milk secreted meant that additional food had to be given. Several substances stimulated the thyroid but the iodinated casein was palatable and many others were not.

Mr. R. J. H. Dixon asked if the solids-not-fat were raised by giving dried grass; also, why was the fat greatest in amount in the strippings? Mr. King pointed out that in certain circumstances the presence of fibre would raise fat production and apart from this, the dried grass would raise the nutritional level, hence the S.N.F. Such a supplementary food would be best fed early in winter to avoid the fall of S.N.F. as, in practice, it was difficult to raise the S.N.F. in February once the level had fallen. In animals going out to grass there was a rise which might be due to an oestrogenic action of new grass but this was not proved. The fat was highest in amount in the strippings purely on account of friction between the globules and the duct walls which tended towards their retention.

Mr. Sinclair enquired if there was a difference in milk composition according to the time taken over milking, Mr. King replying that differences were caused essentially by oxytocic action. This hormone had an effect which lasted for about eight minutes and was generally released by feeding, etc., when the cow was conditioned to milking routine. If milking was completed in eight minutes then all the fat available would be obtained; if it took longer then some fat would not be delivered. Petersen's work on the physiology of milking was well known and his "quick milking" routine, based on the stimulus of the hot cloth on the udder and then immediate milking, worked well when applied conscientiously. It was difficult to institute the routine on commercial farms as strict supervision was necessary.

Mr. Crabtree enquired what effect the time from calving to service and the length of the dry period had on the subsequent lactation. Mr. King said that the fat percentage was highest at calving and for the first 10 to 30 days of milking; as it depended on bodily condition, it was highest in animals which were fat at calving. It was lowest at the peak of milk yield and rose as the cow dried off. The solids-not-fat decreased in the milking barren cow but tended to rise in the pregnant one. This meant that a herd with many barren cows, with an infertility problem, would also have a low S.N.F. of the herd milk. The dry period had only an indirect effect on bodily condition but this, of course, was good after a long dry period. The length of the dry period, however, was closely linked with yield.

Mr. Towers enquired about the possible adoption of a "payment on milk quality" scheme. He also asked if noteworthy milk changes had been observed after S19 vaccination. He then referred to a case of acute arsenical poisoning in bovines where the first symptom was a dramatic drop in milk yield—from gallons to pints—and in which for some time afterwards the survivors gave a milk which the owner described as "cream." Mr. King stated that payment for milk on a quality basis was logical for the consumer and that it would offset the increased cost of producing, say, Jersey milk. The fixing of standards and the difficulties of applying the S.N.F. tests which were more complicated than the relatively simple Gerter test for fat, rendered the scheme unlikely. He had no data on post-S19 vaccination milk analyses. In arsenical poisoning it was to be expected that the milk yield would fall and the fat percentage rise, as dehydration was caused by the diarrhoea. Arsenic could be concentrated in the milk and the amount of arsenic in the cream was probably high.

In answer to Mr. Marshall, who said scours in small pigs were possibly related to the sow's milk and who enquired if oestrus was a factor during lactation, Mr. King said pigs were usually weaned at eight weeks and sows did not often come into oestrus until weaning though a latent heat might occur during suckling. The feeding of the cow might cause scouring in calves as, for example, with high protein bean feed. Probably similar effects could be found in pigs.

Mr. Hill asked if there was any explanation of milk from cows with acetonaemia separating quickly, Mr. King replying that his temperature records in cases of acetonaemia suggested that with a higher temperature (104° F. ++) the nervous symptoms were prominent, milk production fell, fat rose and S.N.F. fell. With only slight rises in temperature the reduction in yield and rise of fat percentage was slight and the ketones present in milk varied according to body temperature. He had not observed that the separating quality of the milk was altered, though acetone, being a fat solvent, might assist globules to coalesce.

Mr. Adams suggested that the fall in milk yield in acetonaemia was related to the lowered food intake; would iodinated casein have any rational use? Mr. King said the body reserves were used to maintain yield for a temporary period and the reduced food intake would probably have a greater effect on quality. Iodinated casein was an unsafe preparation and its use was no light matter. The

ANIMALS I HAVE MET

THE FLAMINGO

BY

D. D. OGILVIE

One morning very early when it was still bearably warm and the mid-day heat shimmer had not yet settled on the land I saw something which I shall never forget. We were in India and I had been pulled out rather reluctantly to watch the rise of the flamingos. Not, I thought, a very exciting start to the day. But when a rifle-shot brought the thousand or more birds into the air I was amazed. The opening of their wings threw a rosy pink flush of indescribable beauty over the sky, pure, glowing, and very lovely. "*Phoenicopterus ruber antiquorum,*" said one of my companions who had seen it all before. "Really quite an ugly thing when you see it close to and a real problem child." He had once been on an expedition to do with flamingos to an area known picturesquely as the Great Rann of Cutch and in the back of the car on the way home, through him, I became a knowledgeable flamingologist, so that when I saw them elsewhere I was able to discourse learnedly on the many problems they present.

Just as the camel among mammals is a make-up of bits and pieces so is the flamingo among birds a composition of spare parts left over at the creation. Its true position in the scheme of things is a matter of dubiety both to the anatomist and the systematist. True its anatomy has various connections with the world of birds, but as a complete whole its relationship is less definable. And in keeping with its curious structure its habits are quite unique. Indeed, until recently little was known about them. Not only was there doubt, for example, about the nesting sites of the birds, but even about their nesting posture. Naturalists who felt strongly on the matter, were sharply divided. There were some who claimed that the flamingo sits on its nest in the normal way with its legs bent under it, while others affirmed that it sits astraddle, with its legs dangling. And there were the odd one or two who thought that, being a lady, it even went side-saddle, but no one quite believed them. And there was doubt too about the diet on which flamingos lived, their migrations, their loss of colour in captivity and many other points. Not all of these problems have been resolved but patient observations are gradually unravelling the mysteries with which these curious birds have chosen to shroud their existence.

First of all we now know many of their breeding grounds in India, Spain, the Bahamas, Iraq and Africa, although why they make things so difficult for themselves is still quite a question.

For their nests they choose flood areas near the sea where the water is receding after the rainy season. There they scoop the mud up into mounds with their beaks, building it up as high as a couple of feet. The nests are in colonies often several hundred together and the eggs—never more than two—are laid in a saucer-like depression at the top of each mound. The water is usually receding constantly and by the time the chicks are born it may be miles away. It is essential for the young chicks to get to the water as soon as possible so they leave the nest within a few days of hatching, congregate in parties of a hundred or more and start on a rapid and often exhausting march to try to catch up with the water. Sometimes they have miles to go and travellers meeting them in desert places have often been puzzled as to what it is all about. But the chicks are quite purposeful and when they do reach the water—those of them which survive—they throw themselves in with joyous abandon. Young flamingos have to be tough. They must be good walkers and runners—they literally walk into adult life—and at the same time, good swimmers. But best of all, like every youngster, they enjoy paddling. After their long, dusty hike they cool off their steaming feet in the shallows keeping up an incessant chatter and smacking the water every now and then to show their pleasure. At this time their fluffy plumage is brown but it soon lightens in colour and a gradual suffusion of pink occurs as the adult stage is approached. The colours of the plumage vary with the seasons. When not breeding the birds are whitish with rose pink wing coverts but during "springtime" the coverts become scarlet and the whole of the white plumage is tinted with a pink evanescent bloom.

Soon after death the colour begins to fade and a similar fading is often noticed in birds in captivity. New York Zoo, having announced the glories of their flamingos in appropriately colourful terms, were at one time greatly perturbed to find that all of their birds had become almost white in colour. With characteristic American resourcefulness the curator remedied the condition by adding to their food a strong but harmless dye which to his surprise tinted the birds a brighter hue than nature ever intended. London Zoo experienced similar trouble but felt that this was taking salesmanship too far. Investigations, therefore, were pressed forward until it was found that allowing the birds free access to small crustacea in a pond quickly restored their lost colour, much the same sort of thing that happens to the salmon when he re-enters the sea after his migration.

In feeding, as in all else, the flamingo is something of an enigma. The nesting sites, from which the birds do not appear to stray very far, are usually absolute desert in which no trace of living matter can be found. Examinations of chicks' stomachs show quantities of sand and little more. But here and there are small black seeds. Perhaps these are brought to the chicks by the adults from some distance away but no one really knows and whatever the explanation it seems certain that the chicks start out in life by being staunch vegetarians and not very well nourished ones at that. Whenever they get to the water, however, they change at once to an animal protein diet of shrimps and other crustaceans which they catch with dexterity and ingest with obvious pleasure.

Thus then the flamingo, a curiosity in a curious world. And when next you see one red and rosy at your local zoo let's hope it keeps that way by a twice-weekly visit to the local Pruniers rather than by over-indulgence in the red ink bottle.

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increase in yield was most evident with a cow which had just passed the peak of production and was dropping in yield. In such a case the curve was sent up for eight or nine weeks and after this the use of iodinated casein was probably harmful. Most acetonaemias were present prior to the peak of milk production.

Dr. Sellers complimented Mr. King on his choice of investigation which he thought was beneficial to the profession. The cost of experiments of this nature was, however, a limiting factor. In many ways the physiology of ruminant digestion was unique as compared to that of other animals and the results could not be transferred indiscriminately from one animal species to another.

Mr. Donaldson referred to anthrax, where high bodily temperature did not seem quickly to affect milk yield. Mr. Allan thought that investigations concerning anthrax cases had seldom shown the presence of bacilli in milk.

CLINICAL COMMUNICATION

THE TOXIC TOAD

R. H. SMYTHE,
NOTTINGHAM

Poisoning in the dog arising from contact with the saliva or skin of the common toad has been noted very frequently by the writer and probably by many of his colleagues, but a search through available literature has disclosed no record of such cases.

The majority of dogs affected appear to be of the spaniel or retriever type, owing probably to their habit of smelling first and looking last; however, a few cases have been encountered in terriers which apparently have mistaken a toad in long grass for a rat and in some instances have actually bitten it. In numerous other instances a tentative diagnosis has produced a blank expression on the face of the owner, who later, in many cases, has rung up to say that it has been discovered that there really was a toad in the garden.

The symptoms are characteristic and fall under two headings: (a) emesis; (b) some degree of cardiac failure.

The venom of the toad is present in the parotid secretion and also in the skin. Biting the skin of a toad appears to produce more immediate, acute symptoms—particularly emesis—than does contamination with saliva, although it seems that the toxic content of the parotid secretion is increased if the toad is enraged or startled. In either event, the first and almost immediate reaction on the part of the dog is emesis. The first vomit contains all the stomach contents, the second the intestinal contents. Retching then abates but the dog continues to pour forth strings of ropy saliva which adhere to the neck and chest wall. The second invariable symptom is some degree of heart failure. The animal may be said to faint; the body temperature falls, respiration is shallow and the heart sounds are indistinct and muffled. The dog remains unconscious or semi-conscious for a period extending into hours. Usually improvement commences after one or two hours and in 12 hours the patient is again normal. Death has occurred in two of the writer's cases, in both of which the animal disappeared and was not discovered until moribund. However, a fatal termination may be regarded as unusual.

Treatment comprises the provision of warmth and the maintenance of body temperature. Adrenalin appears to help restoration to consciousness.

The Toad Poisons.—Venom secreted in the parotid glands of toads is a complicated mixture consisting of several conjugated and free genins. Other substances present include epinephrine, bufotenidine and related tryptamines, sterols, fats, etc. The toad poisons proper are known to be steroids. The particular product of the common European toad, *Bufo vulgaris*, is known as *bufotalin* and this substance has been studied very extensively.

Physiological Actions.—The effect on the heart and the emetic actions are the important physiological properties of the cardiac principles. The cardiotonic properties of bufotalin are due to a direct action on the heart muscle but the emetic action is less easy to account for; it has been shown that it does not depend upon its effect on the brain centre. In practice, emesis appears so rapidly that one might be tempted to regard it as psychological and indicative of repugnance, were it not for the fact that it occurs equally rapidly after injection of an aqueous-alcoholic solution of the glycoside into the blood stream.

Toad saliva is extremely toxic and the writer has been informed on good authority that "a very few minims" of the parotid secretion of an enraged toad injected into the blood stream of a terrier dog will cause death "almost instantaneously." This would appear a rather vague statement were it not that the physiological potency of all the cardiac principles has been estimated very accurately for the cat and recorded by Chen and his co-workers. They found that the minimal dose of bufotalin which will prove lethal to a cat by producing cessation of the heart-beat during systole is 0·00917 mg. per kg. bodyweight and that the minimal emetic dose is 0·05 mg. Apparently, no figures have as yet been worked out for the dog, but clinical evidence points to the possibility that the reaction to the emesis factor is more marked in the dog than in the cat.

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ABSTRACTS

Effect of a Copper Supplement to the Rations of Milking Cows*

Some years ago it was demonstrated in New Zealand (I. J. Cunningham, 1944, *N.Z.J. Agric.*, **69**, 559) that dairy cows grazing on the peat lands, where symptoms of copper-deficiency are common in lambs, produce more butter-fat when their ration contains additional copper. The present study concerned cows in the south and west of Scotland during the winter period of stall feeding, and involved 19 herds from nine counties.

In each herd two groups of animals were selected according to month of calving, daily yield and the yield of fat during the previous lactation. One group served as negative controls, while a single dose of 10 g. of copper sulphate was added to the ration of cows in the second group. The addition was made within a week of sampling. Statistical examination of the resultant butter-fat analyses indicated a weighted mean increase (in grammes) butter-fat per cow per day of 20·1, with a standard error of 5·22. The treatment was held to have a real effect, although apparently not large enough to be detected on most single farms.

A. N. W.

* **Effect of a Copper Supplement to the Rations of Milking Cows.** DUNLOP, G. (1953). *Nature.* **171.** 356.

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Feeding of Seaweed Meal to Lactating Cows*

In a trial conducted on similar lines to the above, and involving 17 dairy herds in the west of Scotland, 200 g. seaweed meal was incorporated in the afternoon production ration, paired animals being selected as negative controls. The meal employed was dried, milled *Ascophyllum nodosum*. In five herds the experiment had to be terminated after one to two days owing to refusal of the food by animals in the experimental groups. In the remaining 12 herds the supplement was continued for from three to four weeks, at the end of which period analysis indicated an increase in butter-fat production greater than that secured from a single dose of 10 g. copper sulphate. Statistical examination of the results indicated that the effect was a real one, although again not large enough to be detected on most single farms.

A. N. W.

* **Feeding of Seaweed Meal to Lactating Cows.** DUNLOP, G. (1953). *Nature.* **171.** 439.

R.C.V.S. Dinner in Edinburgh

MINISTER ON THE IMPORTANCE OF VETERINARY SCIENCE TO MODERN AGRICULTURE

On the occasion of the meeting of the Council of the Royal College of Veterinary Surgeons in Edinburgh, and immediately after the annual general meeting held at the Royal (Dick) School of Veterinary Studies of the University of Edinburgh on May 27th, 1953, a dinner was held at the North British Hotel, Edinburgh. This was attended by over 100 members of the profession and their ladies, together with distinguished guests. These included the Joint Parliamentary Under-Secretary of State for Scotland, Mr. McNair Snadden, and Mrs. Snadden; the Lord Provost of Edinburgh and Lady Miller; the Vice-Chancellor of the University and Lady Appleton; the President of the Royal Society of Edinburgh, Professor J. P. Kendall; the President-Elect of the British Veterinary Association and Mrs. Thomson; Mr. A. Glen, of the Department of Agriculture for Scotland; the Secretary of the University of Edinburgh and Mrs. Stewart; Professor F. A. E. Crew and Mrs. Crew.

Before the dinner the President, Professor J. G. Wright, and Mrs. Wright, together with the officers of the College, received all those attending the function.

Proposing the toast of the Royal College of Veterinary Surgeons, Mr. McNair Snadden, M.P., Joint Parliamentary Under-Secretary of State for Scotland, said he felt much honoured at being invited to be their guest, and still more at being asked to propose the toast of so famous an organisation. He wondered on what common ground he and veterinary surgeons could meet, but he did find common ground when he remembered with pride that he was one of the first non-veterinary representatives ever to be appointed to their Council through a Parliamentary nomination. Unfortunately, and to his sorrow, he had to give place to someone else as he found that his duties prevented him from attending meetings. Nevertheless, as a Scottish Minister, and incidentally as a Scottish farmer, he could say that he had followed their work with great interest and admiration, and he hoped also with some application. (Applause.)

As a member of Her Majesty's Government it gave him great pleasure to salute a great body which for over a century had been the champion of progress in this vital field of animal husbandry. The agricultural industry and the Government had good reason to pay tribute to the fine service rendered to the country by the veterinary profession, and this he willingly did on behalf of the Secretary of State. Scots, of course—and perhaps not without reason—took great pride in their livestock industry. They were essentially a livestock country. They were jealous of the quality of their livestock, and in so far as they had succeeded in their efforts, there was no doubt that their veterinary surgeons must share in large measure the credit for what had been achieved.

Their progress towards the eradication of bovine tuberculosis was something to be proud of, and the day when the whole of Scotland would have become attested was almost within sight. He knew from the work of his own department what fine service had been given by the profession in the Highlands and Islands of Scotland.

But if Scotland was jealous of the quality of her livestock, so also were veterinary surgeons jealous of the quality of their members. He knew that the efforts of the Royal College had been directed to this end since its foundation over a century ago. Immense progress had been made since the day when seven veterinary surgeons, including a notable Scot—William Dick—petitioned Queen Victoria for the Royal Charter. We owed an immense debt to these great pioneers and naturally they in Scotland were very proud of William Dick, the founder of the Edinburgh College. He liked to think that his great contribution to the development of veterinary education in our country was now being markedly reflected in the growing faith and confidence which he could see between farmer and veterinary surgeon. Speaking as a stockbreeder with 30 years of pedigree stockbreeding behind him, nothing had impressed him more than this growing confidence.

How different were things to-day in this age of scientific development from the early days which he recalled. To-day the farmer was realising more and more the value of scientific research. He sought professional advice now not merely in an emergency but in the ordinary day-to-day running of his farm. Prevention was taking the place of cure. This was a great step forward, and although the complete and utter union of science and practice still perhaps remained a great ideal, there was no doubt at all that they were moving steadily along the road of progress towards the objective. This growing confidence was greatly to the credit of the veterinary profession, for it was no easy matter to get under the skin of a Scottish farmer. He was one himself, and he knew how very little they took for granted—they liked to be sure the thing would work. For example, they were a little doubtful whether penicillin would make pigs fat overnight, but once they were sure he was afraid there would be an ugly rush for the stuff.

The agricultural industry faced a big task. The Government was asking it to increase its output of meat, to step up its output of milk per cow, to expand its pig and poultry production. In this battle perhaps their greatest enemy was disease. Here the veterinary profession was the spearhead of the attack—the armoured division that would pave the way for the advance that would carry the country to the higher and permanent level of production that they all wished to see.

In submitting the toast of the Royal College, one thought instinctively of the great men who pointed the way to the high standards and achievements of to-day—men who had worked hard and sacrificed much with little thought of material reward.

Of such men Longfellow wrote:—

> The heights by great men reached and kept
> Were not attained by sudden flight
> But they, while their companions slept
> Were toiling upward in the night.

He was sure these words applied not only to the great men of the past but also to the most distinguished President with whose name the toast was coupled. (Applause.)

"A Special Source of Veterinary Surgeons"

Professor J. G. Wright, President of the Royal College of Veterinary Surgeons, replying to the toast, said that by the Royal Charter to which Mr. McNair Snadden had referred, it was specified that the annual general meeting could be held in one of the capital cities of the British Isles, and this was the fourth occasion on which it had been held in Edinburgh. The first occasion was in 1880 when an Englishman, George Fleming, was chairman. The second was in 1904 when a Welshman, W. Williams, was the chairman. The third was in 1921 when a Derbyshire man

by birth but Scottish by adoption, Charnock Bradley, was chairman. The fourth occasion was in 1953 when the chairman was "a man of mixed breeding."

Scotland had always been a special source of veterinary surgeons both in number and quality. (Hear, hear.) For many years there was only one school in England—the one founded in 1791 in London. In Scotland there were two schools, one in Edinburgh and one in Glasgow. Mr. McNair Snadden had mentioned the name of Dick. They in England also revered the name of Dick. He had been a member of the Council, and although he was never its president his portrait hung on the walls of their Council Chamber in a most honoured position. Their historian Smith described him as "a stocky man of rugged countenance." There was not the slightest doubt that he was a rugged and courageous man, for one of the first things he did when the College became a College in 1844 was to disagree with his London colleagues most violently and decide to separate from them.

So it was correct to speak not of their union with Scotland but of their reunion with Scotland in 1879. Since then, Scotsmen had always played a great part in the affairs of the Council. He had noticed that the greater the distance a man lived from the Council Chamber, the greater the frequency with which he attended their meetings. Outstanding in that connection were the Scots; if ever he called a special meeting of the Council he could always depend on it that the Scottish contingent would be there *en masse*.

The present period had probably been the most momentous one in their 110 years of history. In 1948 there was placed on the Statute Book an Act of Parliament that did two things. The first part of that Act embodied (entirely a Scottish word) the schools, which were private institutions. As a result of Act of Parliament all our schools became integral parts of our Universities.

The second part of that Act was to restrict the diagnosis and treatment of diseases of animals to veterinary surgeons. They had reason to be proud, for very few professions occupied such a privileged position as they did. Professional men were conservative and rather suspicious of change, and when it was suggested that an educational system which had existed for 104 years should be transferred to the Universities there was some doubt about the wisdom of the procedure. Nevertheless, they of the Council were persuaded that this was the proper thing to do. The Council were extremely proud that the colleges had now been incorporated, and the Council would do their utmost to help in their development. (Applause.)

It was the menace of war that stimulated our Parliamentarians—that directed the minds of our Parliamentarians towards the adequacy of the veterinary services for agriculture. The period between the wars was one of great apathy. British agriculture was in the doldrums and the veterinary surgeons were neglected. To-day we lived in a changing world. The call to agriculture was for more and more production. So long as that remained the state of affairs, and provided they as a profession met adequately the needs of agriculture, their success as a profession was assured.

Returning to the subject of Scottish connections with veterinary science, Professor Wright recalled that William Dick went down to London in 1817 to attend the new college being developed there. Dick wished to become a member. It was said that having seen and heard Coleman he decided there was nothing very much the college could teach him and he asked for and received his diploma. Coleman regarded him as "a rather rude Scotsman," and was glad to be rid of such a persistent questioner.

Another Scot to whom he wanted to refer was McCall, who established a veterinary school in Glasgow in 1862. He had the greatest admiration for the Glasgow school. For 20 years—from 1924 to 1944—it received not the slightest encouragement. It received no money at all from the National purse, and yet as the result of the enthusiasm of its authorities, and in no small measure of that of the private practitioners in Glasgow who helped with no hope of reward, that school survived and to-day was the flourishing veterinary school of the University of Glasgow.

Relatively Unexplored Fields of Veterinary Usefulness

As a result of the Veterinary Surgeons Act, two new veterinary schools had been established in England—at the University of Bristol and the University of Cambridge. There were some who feared that there was a danger of creating too many veterinary surgeons—that the profession would become over-populated and that consequently there would be unemployment.

Their profession was numerically small; they numbered some 5,000. They had increased by 20 per cent. in the past decade, yet still they were fully employed. He himself was optimistic of the future provided that the nation fully utilised the services of veterinary surgeons in their expert capacities.

There were still many fields of veterinary professional usefulness which had been relatively unexplored. One of the greatest was that of food hygiene. The Scots, of course, were always a jump ahead of the English. When one thought of food inspection one found they did things properly in Scotland. All their abattoirs were under the supervisory control of the veterinary profession. That point had been made very strongly to the Government. It seemed, however, that three Ministries were involved and each appeared to be "passing the buck."

But returning to Scotland. . . . There had always been a great urge to develop veterinary schools in that country. Dick, Gamgee, and later Williams, a Welshman, developed schools there. The University of Liverpool invited Williams to bring his school from Scotland to Liverpool, and everyone knew what had happened in Liverpool. (Hear, hear.)

He had mentioned the subject of food hygiene. The poultry industry was one for which the veterinary services had not been adequately developed, and in a small measure the fault lay with the profession, for they had perhaps been too largely pre-occupied with the larger animals. It was up to those who controlled the policy of the profession to see that veterinary surgeons were adequately trained and prepared to deal with the whole of the problems that confronted the poultry industry to-day, for they were very great ones.

Their work in the field of preventive medicine would continue. Mention had been made of the reduction in bovine tuberculosis. The Ayrshire cattle breeders recognised about 35 years before anyone else that attestation was a very good thing. The result was that in Cheshire, where there were more cattle per square inch than in any other county, they changed from Friesians and Shorthorns to a predominance of Ayrshires. They were not so impressed with the magnificence of the Ayrshire horns; they found them somewhat dangerous, and thus veterinary surgeons in England spent a great part of their time removing them. (Laughter.)

As the result of the great advances that were being made in preventive medicine the pattern of their clinical practice was changing. They were now realising that there

was a great deal of metabolic disturbance in animals as a result of developing their great production. One of the great preventive problems would be to keep animals healthy while increasing tneir productive yields.

The country was now endeavouring greatly to increase its beef production and they were rapidly developing their marginal uplands. Here they were going to face other problems. They had to be continually vigilant, and would have to keep pace with the advances of physiology and biochemistry.

They lived in a changing world. Their sister profession of medicine had seen a very great change in the manner in which its science was translated to the public. He did not know what was in store for veterinary surgeons. They were concerned that their science should be made fully available to agriculture, but they believed that for professional advance there must be considerable freedom. They were terribly afraid of any system which stifled individuality—any system which stifled the man with a bee in his bonnet. He believed it was those individuals who made the most striking contributions to science. (Applause.)

The City and the University

The toast of "The City of Edinburgh, the University of Edinburgh, and The Guests" was proposed by the Treasurer, Professor J. B. Buxton. Professor Buxton referred to Edinburgh as "city, Royal Burgh and County in itself," and said it was his privilege in proposing the toast to make reference to the city and the university. To some of them it might seem an unusual combination; and there were relatively few instances where one could do it with ease and felicity, as one could with Edinburgh. The city of Edinburgh and the University had always been—or nearly always been—on excellent terms. The city had a governing right in its protégé. The University had always been respected and enjoyed every sort of understanding; and the result had been most happy.

It was true, of course, that this University was the youngest one in Scotland. It was only born in 15-something, but it seemed to have made good progress. The city was recognised, and he was quite sure it always would be, for its beauty, its literature and its science; and the University had played a very great part in building up the reputation which it enjoyed.

A man was never chosen to hold an exalted office because someone liked the look of him. The Lord Provost was invariably a man elected for what he had done for his city throughout the years. It was well known that Sir James Miller's interests were very wide in his profession. They were centred not only in the city of Edinburgh but also in the City of London. The Lord Provost was also Chairman of the Festival Society and had expended enormous energy in explaining the intrinsic beauties of this Festival to those who lived in other countries. So long as Edinburgh had men like the present Lord Provost as its civic head, it would not go far wrong. (Applause).

As far as the Vice-Chancellor was concerned, Professor Buxton said he had very seldom had the opportunity of meeting him. It unfortunately happened that when he was fortunate enough to go to Cambridge to take up a chair Sir Edward Appleton decided to go to London to take up a chair. When he (Professor Buxton) was shifted to London Sir Edward "popped back to Cambridge."

In having as the Principal and Vice-Chancellor of their University a man of the calibre of Sir Edward Appleton Edinburgh was indeed fortunate. (Applause.)

Replying to the toast, Sir James Miller said that Professor Buxton's speech implied that although the city and the University of Edinburgh were on excellent terms such had not always been the case. He recalled a former Lord Provost saying on the occasion of one of these rare differences: "It's not the University I object to, it's the Principal of the thing." (Laughter.) With the present Principal, however, relations were most cordial. It was always a pleasure to be associated with Sir Edward and he was happy that on this occasion they were to act as "a double turn."

He did appreciate all the kind things Professor Buxton had said about Edinburgh and he agreed with most of them. It was indeed a city to be proud of. One of the things of which they were proud was their close association with the University. It might be the youngest University in Scotland but it certainly was a healthy and thriving youngster. They were proud of this association which had gone on for some 400 years; they were also proud of an association, just as close, with the Royal (Dick) School of Veterinary Studies. For a certain period in its history the Town Council were practically solely responsible for the running of it. He would not say whether or not it was the most progressive period, but he was sure it had always served, and would continue to serve, a very valuable purpose. (Applause.)

Sir Edward Appleton, in his reply, said that if one lived in Edinburgh, where, it seemed to him, there were more speeches per square meal than any other place he knew, one would often hear the Lord Provost and himself singing a duet in reply to the toast of the City and the University—Town and Gown. It was always a pleasure for him to join in that reply—for two reasons. First of all, the University was the child of the town, who reared it and fostered it until, close on 100 years ago, they got a latch-key of their own. The other reason was a quasi-scientific one and concerned the Lord Provost himself.

In science they had talked for many years about the Principle of Conservation of Energy. Latterly that had been joined by what they called the Principle of Relaxation. Though it was not for him to suggest that the Lord Provost scorned scientific matters, he had to say that neither the Principle of Conservation of Energy nor the Principle of Relaxation applied to him—so unsparing was he in his exertions on behalf of his fellow-citizens. And that applied, too, to his gracious consort, the Lady Provost. (Applause.)

It was always an agreeable thing to meet the members of a professional institution—an institution whose concern was not with hours of work and rates of pay, but with the maintenance and enhancement of professional standards of service. (Hear, hear.) It was, of course, no secret that one of the reasons for the visit of the President and Council to Edinburgh was to have a look at part of the University, the Royal (Dick) School of Veterinary Studies, and see that their students were being adequately trained for the professional Royal College qualifications. The University had invited the Royal College Council to be their guests at dinner in the University the following night, but he could assure them that extending that invitation was not a case of touting for a good mark. No, they wanted to be judged on their own merits.

The University of Edinburgh was just emerging from the Lind Celebrations—during which they celebrated the bicentenary of the publication of James Lind's famous Treatise on Scurvy in which he described how scurvy could be cured if people ate the right food—food which, as

we now knew, contained vitamin C or ascorbic acid. In the course of their scientific discussion he learned an interesting fact, and that was that human beings and guinea-pigs were the only animals who needed to take in vitamin C—all other animals automatically manufactured it internally for themselves. He asked veterinary surgeons to remember this and be specially thoughtful for the poor little guinea-pig as regards his vitamin C.

As a schoolboy he kept guinea-pigs—and other pets as well from time to time—rabbits, cavies, white mice, white rats and doves—and he would like to suggest that the proper care of pets was a source of excellent training for young people. (Hear, hear.) He well remembered that, when he kept pets, the responsibility for them was laid squarely on his shoulders and that if he went away on holiday he had himself to arrange that someone else—a relative or friend—would care for them in his absence. In this way he certainly acquired the conception of responsibility even though, as a youngster, he doubtless would not have used that particular word for it.

He was a great admirer of the veterinary profession. There could scarcely be any one of the guests present who had not had reason to be grateful to members of the profession for the exercise of their skill and knowledge, and above all their compassion, in dealing with their own animals—farm or domestic. (Applause.)

REVIEW

[A Dictionary of Scientific Terms (Henderson). Fifth edition (1953) by JOHN H. KENNETH, M.A., PH.D., F.R.S.E. Published by Oliver & Boyd: Edinburgh, Tweeddale Court; London, 98, Great Russell Street, W.C. Price 32s. net.]

The fifth edition of the Dictionary of Scientific Terms represents further considerable revision of and addition to previous editions. The subjects covered are biology and allied matters, botany, zoology, cytology, genetics, embryology, anatomy and physiology; some bacteriological terms are included. From this it will be obvious that although not strictly a veterinarian's book, there is much valuable information in it for members of the profession, particularly those in the more academic spheres of professional life.

FLUORINE AFFECTING GRAZING STOCK

In its issue of July 7th *The Farmer and Stock-breeder* reports that fluorine poisoning, "a serious menace in the Rotherham district," was discussed at a meeting of farmers called there by the West Riding A.E.C. Mr. H. T. Jones, Provincial Director of the N.A.A.S., said the poisoning at Rotherham was far worse than in any other part of England, and this would be the first place at which this trouble was to be investigated by the Ministry of Agriculture.

Mr. J. Gibbons, West Riding County Agricultural Officer, said he understood that crops were not seriously affected. Fluorine occurred as a surface deposit which settled on the plant and in that way it got into the animal. It did not get into the tissues of the plant, so far as he knew, and the growth was not affected.

It was grazing animals that were being poisoned, and in some cases it had become uneconomical to keep grazing stock. The one bright aspect of the present situation was that the end of feeding-stuff rationing meant it might be possible to keep cattle on affected farms if they were given a fair proportion of brought-in feed.

VICTORIA VETERINARY BENEVOLENT FUND

35TH ANNUAL GENERAL MEETING

The 35th annual general meeting of the Victoria Veterinary Benevolent Fund was held at the Royal (Dick) School of Veterinary Studies, Edinburgh, on Wednesday, May 27th, 1953.

There were present: Professor J. B. Buxton (President) in the chair, Professors G. F. Boddie, R. E. Glover, Mrs. Daisy I. Glover, Messrs. G. N. Gould, S. Jennings, Captain T. M. Mitchell, Professor W. M. Mitchell, Dr. R. F. Montgomerie, Mr. G. M. G. Oliver, Professor L. P. Pugh, Messrs. R. H. Smythe, Alex. Thomson, Captain Wm. Watt, Professor W. L. Weipers, Mr. J. B. White and Dr. W. R. Wooldridge.

Notice of Meeting.—The Secretary read the notice convening the meeting.

Minutes.—The minutes of the previous annual general meeting held on June 4th, 1952, having been published, were taken as read and signed as correct.

Apologies for Absence.—The Secretary announced apologies for absence from Messrs. E. P. Barrett, H. W. Dawes and Major J. J. Dunlop.

ELECTION OF OFFICERS

President.—On the motion of Professor W. M. MITCHELL, Professor J. B. Buxton was unanimously re-elected President for the ensuing year.

Vice-Presidents.—The four Vice-Presidents, Messrs. H. W. Dawes, G. P. Male, Professors L. P. Pugh and G. H. Wooldridge, were re-elected *en bloc*, on the motion of Mr. G. N. GOULD, seconded by Professor W. L. WEIPERS.

Hon. Secretary.—It was resolved, "That Major J. J. Dunlop be re-elected Hon. Secretary for the ensuing year."

Hon. Treasurer.—On the proposition of Professor L. P. PUGH, seconded by Professor G. F. BODDIE, it was resolved, "That Mr. H. W. Dawes be re-appointed Hon. Treasurer for the ensuing year."

Hon. Solicitor.—Professor BUXTON proposed from the chair the reappointment of Mr. R. V. Thatcher as Hon. Solicitor to the Fund, which was warmly approved.

Auditors.—The auditors, Messrs. Wilkinson, Chater & Co., chartered accountants, were reappointed for a further year.

ANNUAL REPORT AND STATEMENT OF ACCOUNTS

The PRESIDENT stated that the Annual Report and Statement of Accounts had been circulated and asked for a proposition that they be adopted.

Professor G. F. BODDIE, in moving their adoption, said he wished to raise three small points. On page 6 of the annual report it would be seen that there had been rather a long and progressive drop in subscriptions. It had occurred to him that there was one factor that could be corrected. A considerable number of people paid their subscriptions by Banker's Order, but a considerable number who did not, got no notice reminding them that their subscriptions were due. He would strongly suggest that it would be money well spent to send out notices to those people who paid their subscriptions other than by Banker's Order.

Again, concerning subscription income, he had noticed from the report that the proportion of subscribing members of the profession was rather small. Appeals had been sent out through divisional branches and divisional secretaries had done their best. It was not very easy, however, for divisional secretaries to do very much, because often they did not know a great deal about the Veterinary Benevolent Fund and usually they were very busy men. He put forward the

suggestion that it would be worth while to ask people interested in the fund to act as ambassadors or emissaries to see that more people subscribed.

A special vote of thanks was due to Scotland for the magnificent total once again achieved by the Ladies' Guild. Grateful as they must be to Ladies' Guilds elsewhere for their efforts, it was easy to work out that the Ladies' Guild in Scotland set them an example. It was the case that where the Ladies' Guilds were active the subscribing membership of the profession was active also. It would seem that there was considerable room in England to increase the number of subscribers to the fund by the two methods he had suggested.

Mr. G. N. Gould, in seconding, said that if every member of the profession could have his attention drawn to the fund by circular, a great deal of good might result. If everyone gave half a guinea annually it would be a great help, for the fund must have a larger income to meet the increased calls being received.

Captain Wm. Watt spoke in support of the proposal, saying that in the circular letter attention should be drawn to the small number of regular subscribers. It should contain a request that those who did not subscribe by covenant should consider transferring their subscription under a deed of covenant.

Dr. W. R. Wooldridge referred to the fund's investments as shown in the general balance sheet and suggested that a review of some of the securities might be made.

In reply, the President said he would refer these suggestions to the Council for close consideration. Prior to the last war they did remind subscribers but this was discontinued at a time of financial stringency and the cost of circularising was rather large compared with the results achieved. He was inclined to think, however, that the time was now ripe and that they should revive the sending out of circulars.

The President commented how deeply conscious he was of the help given to the Council, especially by the Ladies' Guild. The money provided brought hope and comfort to the really needy. It was indeed an act of charity ; no one knew that better than he, and it was deeply appreciated.

The Annual Report and Statement of Accounts were then adopted.

Elected Members of Council

On the motion of the President, it was agreed that with the substitution of Mr. Arnold Spicer's name in the place of Mr. A. J. Beeson, the following be the 10 representative members of the fund on the Council for the ensuing year :

Mr. John Holroyd, Professor T. G. Browne, Mrs. D. I. Glover, Mr. G. N. Gould, Dr. W. R. Wooldridge, Captain J. W. Procter, Captain A. Whicher, Mr. E. P. Barrett, Professor W. L. Weipers, and Mr. Arnold Spicer.

Any Other Business

The President took the opportunity, on behalf of the fund, to announce its very deep thanks to the Royal (Dick) School of Veterinary Studies for the generous accommodation which had been provided.

The meeting concluded with a cordial vote of thanks to the President for his conduct in the chair, ably proposed by Mrs. D. I. Glover, who, at the same time, on behalf of the Ladies' Guild, expressed its appreciation of the valuable work carried out by the Council.

XVTH INTERNATIONAL VETERINARY CONGRESS IN STOCKHOLM

Many persons deciding to attend the above Congress, and who have sent in their application forms, it may be several months ago, have been worried because they have received no information regarding hotel accommodation and other arrangements for the Congress in Stockholm.

This anxiety has been shared by the Permanent British Committee, which has received many letters asking what is the position and why there is the delay.

A British veterinarian, visiting Stockholm last week, was asked to go to the Congress office, and, of course, letters were sent from the London office. The following answer has been received :—

"Dear Mr. Oates,

For the last three of four weeks, I have been busy with the Proceedings, which work has been made more time-consuming and troublesome because of labour troubles and other circumstances beyond our control. On account of this there has been some delay in the sending out of information about accommodation. During the coming week, however, I plan to make up the lost time and shall send all British members of the Congress our sixth bulletin and confirmation of their applications for accommodation. A copy of the bulletin is enclosed.

With kind regards,
Yours sincerely,
Axel Isaksson, *Secretary*."

The following enclosures were also received :—

XVth International Veterinary Congress,
Organising Committee, c/o Isaksson,
State Veterinary Medical Institute,
Stockholm 50, Sweden.

Stockholm, July, 1953.

Dear Colleague,

The Organising Committee of the XVth International Veterinary Congress have the honour to send their sixth and last circular and bid you a hearty welcome to Stockholm.

Journeys to and from Stockholm.—Application forms for obtaining reduced railway fares in Sweden are enclosed. One application form should be used per person for tickets to Stockholm and one for tickets from Stockholm. Application forms for journeys through Norway are enclosed to some Congress members and can be ordered by others to the extent needed.

Arrival in Stockholm.—Easily recognisable stewards will be stationed at the Central Station and at the Airport of Bromma on Saturday, August 8th, and Sunday, August 9th, mainly to help Congress members to find their way to their hotels.

Congress members who arrive at Stockholm by train or air on other days than Saturday, August 8th, and Sunday, August 9th, and need any help are directed to the ordinary information service at the Central Station or the airport or to call the Congress Secretariate or Congress Bureau (see below).

Congress members who arrive at Stockholm in any other way than by train or air are asked to call the Congress Secretariate or the Congress Bureau immediately on their arrival if they need any help (see below).

Accommodation.—Information about reserved rooms (if ordered) is attached to this letter. In some cases there is uncertainty as to, among other things, whether the applications for membership also include room reservations or whether rooms have been ordered both through our travel bureau and in some other way. Therefore, persons who have not obtained rooms according to their wishes are requested to inform us of this circumstance at once. Complaints, if any, should not be made, however, if a person who has ordered a single room will receive a double room. It has been impossible for us to obtain single rooms to the extent desired.

Congress members are requested to announce their arrival as soon as possible at the hotel or place where they are to stay.

The Congress Bureau.—The Congress Bureau is located in the Concert Hall, Hotorget at Kungsgatan, phone 30 80 33, open at the following hours:—

Saturday, August 8th, 12 to 18 o'clock.

Sunday, August 9th, to Saturday, August 15th, 8 to 18 o'clock.

Congress members are requested to come to the Congress Bureau as soon as possible to get the Proceedings of the Congress, Part I, the Congress Programme, and other publications. Receipts will then be issued for payments made in advance for membership and banquet fees, for the tours arranged after the Congress, and for the sectional reporters' reprints. Fees not paid in advance can be paid in cash in the Congress Bureau and tickets for sightseeing tours, etc., during the Congress will be available.

All necessary information about the Congress and Stockholm will be given in the Congress Bureau. Telephones, post office, bank, a bar for refreshments, and newspaper stand will also be found there.

The Congress Secretariate.—The Congress Secretariate will be open to and including Friday, August 7th. After that time it will be merged in the Congress Bureau. Address: Royal Veterinary College (Veterinärhögskolan), Experimentalfältet. Phone 30 80 33.

The General Programme of the Congress is enclosed.

The Proceedings of the Congress, Part I, and the detailed *Programme of the Congress* with the list of members, etc., probably will not be printed early enough to be sent to the members before the Congress.

Dress.—Ordinary dress is recommended for all meetings, including the banquet.

With kind regards,

Yours sincerely,

Axel Isaksson,
Secretary.

General Programme

V=programme especially intended for veterinarians.
D=programme especially intended for ladies.

Sunday, August 9th:—
7.0 p.m. Unofficial reception (V, D).

Monday, August 10th:—
9.0 a.m. Plenary session (opening session) (V, D).
11.0 a.m. Break for lunch (V).
Films of veterinary interest (V).
11.30 a.m. Ladies' lunch at Solliden (D).
1.0 p.m. Sectional meetings (V).
Visits to places of veterinary interest in Stockholm (V):
Royal Veterinary College and State Veterinary Medical Institute.
Sightseeing by bus or boat in Stockholm (V, D).

Tuesday, August 11th:—
9.0 a.m. Plenary session (V).
9.30 a.m. Visit on foot to the "Old Town" (D).
Visit by bus to Carl Milles' "Millesgarden," Lidingö (D).
11.0 a.m. Break for lunch.
Films of veterinary interest (V).
1.0 p.m. Sectional meetings (V).
Visits to places of veterinary interest in Stockholm (V):
Royal Veterinary College and State Veterinary Medical Institute.
National Institute of Public Health and State Bacteriological Laboratory.
MC, the Swedish Milk Producers' Association.
Sightseeing by bus or boat in Stockholm (V, D).
7.0 p.m. Congress banquet (V, D).

Wednesday, August 12th:—
9.0 a.m. Plenary session (V).
9.30 a.m. Visit to Prince Eugen's "Waldemarsudde" (D).
11.0 a.m. Break for lunch.
Films of veterinary interest (V).
12.0 noon. Visits to places of veterinary interest outside Stockholm (V):
The Enköping A.I. Association (Laboratory and Bull Station) and Wappa Estate.
Royal Agricultural College, National Animal Experiment Station and the Co-operative Meat Marketing Association in Uppsala. Sightseeing in Uppsala (*special arrangements for accompanying ladies*).
1.0 p.m. Sectional meetings (V).
Visits to places of veterinary interest in Stockholm (V):
Royal Veterinary College and State Veterinary Medical Institute.
National Institute of Public Health and State Bacteriological Laboratory.
MC, the Swedish Milk Producers' Association.
Sightseeing by bus or boat in Stockholm (V, D).
Tour by boat to Saltsjöbaden (V, D).
8.0 p.m. Night concert in the National Museum (V, D).

Thursday, August 13th:—
9.0 a.m. Plenary session (V).
9.30 a.m. Special ladies' session (D).
11.0 a.m. Break for lunch.
Films of veterinary interest (V).
12.0 noon. Visits to places of veterinary interest outside Stockholm (V):
The Enköping A.I. Association (Laboratory and Bull Station) and Wappa Estate.
The Wiad Animal Breeding Institute and Hamra Estate.
1.0 p.m. Sectional meetings (V).
Visits to places of veterinary interest in Stockholm (V):
Royal Veterinary College and State Veterinary Medical Institute.
National Institute of Public Health and State Bacteriological Laboratory.
MC, the Swedish Milk Producers' Association.
Sightseeing by bus or boat in Stockholm (V, D).
7.0 p.m. Visit to the Drottningholm Palace Theatre (V, D).
Unofficial dinner at Solliden given by the Organising Committee for the members of the Permanent Committee for International Veterinary Congresses and official Governmental delegates.

Friday, August 14th:—
9.0 a.m. Plenary session (V).
Ladies' shopping day (D).
11.0 a.m. Break for lunch.
Films of veterinary interest (V).
12.0 noon. Visits to places of veterinary interest outside Stockholm (V):
The Wiad Animal Breeding Institute and Hamra Estate.
Royal Agricultural College, National Animal Experiment Station and the Co-operative Meat Marketing Association in Uppsala. Sightseeing in Uppsala (*special arrangements for accompanying ladies*).
1.0 p.m. Sectional meetings.
Visits to places of veterinary interest in Stockholm (V):
Royal Veterinary College and State Veterinary Medical Institute.
National Institute of Public Health and State Bacteriological Laboratory.
MC, the Swedish Milk Producers' Association.
Sightseeing by bus and boat in Stockholm (V, D).
7.0 p.m. Visit to the Drottningholm Palace Theatre (V, D).

Saturday, August 15th:—
10.30 a.m. Plenary session (closing session) (V, D).

A further letter states:—

Projecting equipment in the sectional auditories.—Apparatus for projecting lantern slides measuring 5 by 5 cm., epidiascope apparatus and projectors for 16 mm. films (sound) will be available in all auditories. Two lantern slide projectors measuring

8 by 8 cm. and for 35 mm. films (sound) will be kept on hand. The epidiascope should be used mainly by the contributors to the discussions and, if possible, not by the sectional readers.

Finally, Dr. Isaksson writes:—

Reprints from the Proceedings of the Congress can be ordered by the sectional reporters, provided this has not already been done, in the Congress Bureau during the Congress week, or from me before September 1st, 1953.

The reprints will contain papers in the Proceedings, Part I, and the contributions to the discussion as published in the Proceedings, Part II.

The price for 50 copies is 32 Swedish kronor and for every additional 100 copies 4 Swedish kronor, provided papers do not exceed four pages. Otherwise a special price will be asked.

The subscription can be paid:—

(1) in advance in the same way as the subscription for the Congress (by cheque direct to the Congress or to Inteckningsbanken AB, Stockholm 16, for account of the Congress),

(2) in cash in the Congress Bureau, or

(3) on delivery.

The reprints will be dispatched as soon as possible after Part II of the Proceedings has been published.

QUESTIONS IN PARLIAMENT

Swine Fever (Crystal Violet Vaccine)

Sir L. Ropner (July 16th) asked the Minister of Agriculture whether he will now introduce a scheme with the object of ensuring a more extensive use of swine fever crystal violet vaccine.

Sir T. Dugdale: I am glad to say that the discussions to which my hon. Friend the Joint Parliamentary Secretary referred in his reply to my hon. and gallant Friend on May 21st have resulted in a substantial measure of agreement. I hope to be able to introduce a scheme soon.

INTERNATIONAL HORSE SHOW

Miss Delfosse's Triumph in Chief Ladies' Event

The International Horse Show, in progress at the White City Stadium, London, as we write, yearly makes a wide appeal to the public, mainly because of the superb jumping that is now its chief feature. For the equestrian enthusiast there were the usual classes for hunters, hacks, cobs, children's ponies, and, as usual, the best hackney horses and ponies in the world were on view. What appealed equally to the casual visitor and to the knowledgeable horseman was the appearance of members of the Spanish School of Vienna, now situated at Wels. This exhibition by those superb horsemen on their white Lippizaner stallions includes high school work "on the ground" and also the spectacular *levade, croupade, courbette,* and other movements which in medieval times were included in the training of the war horse. The school also performed a quadrille.

An early and popular success in the jumping programme was that of Miss Pat Smythe, on Prince Hal, in the Ladies' Débutante Stakes, as was that of Foxhunter in winning the Horse and Hound Cup from a strong foreign field.

Lady Veterinary Rider Wins the Queen Elizabeth II Cup

On Tuesday the considerable number of members of the profession present were thrilled to witness the success of their colleague, Miss Marie Delfosse, M.R.C.V.S., of Northwood, Middlesex, who, on Fanny Rosa, won the Queen Elizabeth II Cup, the chief international ladies' event of the show. Incidentally, all seven competitors who survived to the final jump-off by virtue of clear first rounds were Englishwomen. Of the others, Mlle. Bonnaud of France, Signora N. Perrone of Italy, and Miss de Bromhead of Ireland all failed to survive an exacting test over a stiff and twisting course. When it came to the final *barrage* the time element operated and that meant taking risks. Miss Pat Smythe on Tosca, who was first in, failed at the wall and rustic gates for eight faults, but her time of 83 4-5 seconds would have given her her ambition without two knocks-down. Next came Miss Marie Delfosse on Fanny Rosa, who has had a remarkable run of success already this year with 20 victories to her credit, and she made no fault for a time of 86 seconds, a formidable target for the rest.

NOTES AND NEWS

Diary of Events

July Meetings of B.V.A. Council and Committees

At 36, Gordon Square, London, W.C.1

Wednesday, July 29th, 1953.
11 a.m., Organising Committee.
2.15 p.m., Home Appointments Committee.
4 p.m., Parliamentary and Public Relations Committee.
Thursday, July 30th, 1953.
10 a.m., Veterinary State Medicine Committee.
12.30 p.m., Finance Sub-committee.
2 p.m., General Purposes and Finance Committee.

At the Connaught Rooms, Great Queen Street, W.C.2

Friday, July 31st, 1953.
11 a.m., Council meeting.

Aug. 9th—15th.—XVth International Veterinary Congress, Stockholm, Sweden.

Sept. 6th—12th.—Seventy-first Annual General Meeting and Congress of the British Veterinary Association, at Aberdeen.

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Congress Golf Competitions

Those wishing to enter the competition for the "Simpson" Trophy and the Ladies' competition for the "Dunkin" Trophy are requested to notify Mr. L. G. Donald, B.Sc., M.R.C.V.S., Veterinary Investigation Laboratories, Mill of Craibstone, Bucksburn, Aberdeen, who is in charge of the arrangements.

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R.C.V.S. OBITUARY

Holroyd, John, F.R.C.V.S., D.V.S.M. (Vict.), of "Cornaa," Wyfordby Avenue, Blackburn, Lancs. Graduated Liverpool, March 13th, 1909; Fellowship, May 16th, 1914. Died July 19th, 1953; aged 65 years.

Death of Mr. John Holroyd

It is with profound regret that we record above the death of Mr. John Holroyd, F.R.C.V.S., D.V.S.M., the eminent Lancashire practitioner who was a member of the Council of the Royal College of Veterinary Surgeons from 1927 to 1946 and its President from 1940 to 1942. The news will come as a shock to the countless friends of the family in the profession, but the sad story is simply told. Mr. Holroyd, as was his wont, was spending a long holiday in Ramsey, in the Isle of Man, where he seemed to get greatest relief from the cruel affliction of rheumatoid arthritis, so gallantly and uncomplainingly borne for many years. This present stay, however, coincided with a bleak and rainy period; a severe cold developed, which had the tragic effect of making his complaint more general and he passed away before he could be brought home.

John Holroyd's life—so full of single-minded devotion to the profession, its practice, and its representative organisations, such as the Council of the Governing Body, that of the then N.V.M.A. and the Lancashire Veterinary Association, also the National Veterinary Benevolent and Mutual Defence Society—was a supreme example of devotion to duty. We hope to publish a memoir in our next issue; meanwhile on behalf of our readers we extend deepest sympathy in their grievous loss to Mrs. Holroyd, the son, Harry, who joined the family practice in 1936, and the daughter, Betty.

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Swine Fever—Registered Vaccinated Herds Scheme

In to-day's correspondence column it is suggested that the replies given to Mr. Waddington's questions in his letter in our issue of July 11th should be published in this journal.

As stated in that issue, all the points raised by the writer and many more were dealt with very fully at a special meeting of Council, B.V.A., held in London on July 9th, and previously at a joint meeting of the Lincolnshire and Eastern Counties Divisions held at Peterborough on July 7th, at which officers of the Association and Mr. Waddington were present. Both these meetings approved the scheme in principle and an account of the proceedings will appear in the Supplement in due course. Meanwhile Council members who were present at the special meeting and the many visitors who attended the Peterborough meeting will be able to acquaint their Divisions with the various aspects of the scheme.

The suggestion that this scheme was suddenly thrust on members without their prior knowledge is incorrect. The facts are these:—

The scheme was first mooted by the Ministry of Agriculture and Fisheries at a meeting with the British Veterinary Association in January, 1952, and immediately the Association set up a special sub-committee consisting of the officers of the Association, the Chairman and Vice-Chairman of the Veterinary State Medicine Committee, two other representatives of that Committee, and representatives of the Eastern Counties Division and the Lincolnshire Division, to advise on the Ministry's proposals. This sub-committee considered the main proposals as they were put forward and reported to the Veterinary State Medicine Committee, who, in turn, put their recommendations before Council. Readers of the Supplement should have been aware that a scheme of this nature was afoot, and, as already stated, fuller details will be published in an early issue. As negotiations on certain points are still in progress, members will appreciate that it is difficult to give detailed information at this stage.

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PERSONAL

Dr. E. W. Moodie's Appointment in the University of Queensland Veterinary School

Dr. E. W. Moodie, accompanied by his wife and two children, arrived recently in Brisbane to take up his appointment as Lecturer in Animal Production at the University of Queensland Veterinary School. He obtained his M.R.C.V.S. at the Royal (Dick) Veterinary College in 1948, having won the Silver Medal in Clinique, and, at the same time, he graduated as a Bachelor of Science in Veterinary Science at the University of Edinburgh. On graduation, he joined the staff of the Royal (Dick) Veterinary School as Demonstrator in the Department of Veterinary Hygiene and Preventive Medicine and in 1950 was promoted to Lecturer in Animal Breeding in the same department. Research work on blood phosphate in the bovine at parturition and in cases of milk fever led to the award of the Ph.D. Degree of the University of Edinburgh in 1952. Studies in Animal Husbandry are undertaken in each of the five years of the degree course in Queensland, and Dr. Moodie's arrival will help in developing both teaching and research in this department.

Appointments.—The following appointments in the Colonial Veterinary Service are announced: Mr. A. W. Anderson, M.R.C.V.S., as Veterinary Officer, Gambia; Mr. L. B. O'Moore, PH.D., M.SC., M.R.C.V.S., as Chief Veterinary Research Officer, Northern Rhodesia, and Mr. A. G. Warren, B.SC., M.R.C.V.S., as Veterinary Research Officer, Nyasaland.

Births.—Gilmore.—On June 29th, 1953, at Johnstone House, Belfast, to Mary (*née* Kelly) and R. A. Gilmore, B.A., M.R.C.V.S., Kiscubbin, a son, Hugh David.

Shenman.—On June 22nd, 1953, to E. Doreen (*née* Mount, M.R.C.V.S.), wife of George Shenman, B.V.SC., (SYD.), of Briseis House, Derby, Tasmania, a daughter, Susan Tamara.

Forthcoming Marriage.—Crighton—Gilchrist.—The engagement is announced between George Wallace Crighton, M.R.C.V.S., elder son of Mr. and Mrs. D. R. Crighton, of 157, Strathmartine Road, Dundee, Angus, and Mary Gilchrist, M.R.C.V.S., only daughter of Mr. and the late Mrs. James Gilchrist, of 376, Great Western Road, Glasgow.

Marriages.—Alun-Jones—Hughes.—On March 17th, 1953, at the Church of the Holy Ascension, Upton, Chester, William Sidney Alun-Jones, M.R.C.V.S., son of Mr. and Mrs. W. Alun-Jones, Bodfa, Prestatyn, to Sheila Jackson, eldest daughter of Mr. T. W. Hughes, M.R.C.V.S., and Mrs. Hughes, of Grosvenor Lodge, Mold, North Wales.

Kimberley—Hughes.—On July 18th, 1953, at the Church of the Holy Ascension, Upton, Chester, Harold Maynard Kimberley, M.A., PH.D., son of the late Canon Kimberley and Mrs. Kimberley, of Nelson, New Zealand, and Vicky Jackson Hughes, M.S.R., daughter of Mr. T. W. Hughes, M.R.C.V.S., and Mrs. Hughes, of Grosvenor Lodge, Mold, North Wales.

Will.—Blyth, Captain D., Braintree, Essex, veterinary surgeon, left £37,270 (net £36,542).

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DEGREES CONFERRED BY THE UNIVERSITY OF EDINBURGH

The following degrees were conferred by the University of Edinburgh at a graduation ceremonial held on July 15th, 1953:—

Doctor of Science.—In the Department of Veterinary Science: Alexander Wilson Taylor, PH.D., M.R.C.V.S. Thesis: "Bacteriological studies on Johne's disease of cattle and sheep."

(Dr. Taylor is Senior Lecturer in Bacteriology in the Royal (Dick) School of Veterinary Studies.)

Bachelor of Science.—In the Department of Veterinary Science: John Duncan Adamson, M.R.C.V.S., Harry Affleck, M.R.C.V.S., Alfred Malcolm Barker, M.R.C.V.S., James Tait Bowie, M.R.C.V.S., Vernon Anthony Dennison Browne, M.R.C.V.S., Robin Johnston Campbell, M.R.C.V.S., Aubrey Thomas Fuller, M.R.C.V.S., Thomas Ralph Garrett, M.R.C.V.S., Robert Nigel Gourlay, M.R.C.V.S., Barry Charles Roger Griffiths, M.R.C.V.S., Michael Bruce Jacob, M.R.C.V.S., William Lawrie Mackie, M.R.C.V.S., Julius Benedict Mindel, M.R.C.V.S., Kevin Joseph O'Reilly, M.R.C.V.S., Ralph Stanley Proverbs, M.R.C.V.S., Philip Scales, M.R.C.V.S., Robert Firth Sellers, B.A. (CANTAB.), M.R.C.V.S., Victor Wallace Smith, M.R.C.V.S., Harold Fairbank Vasey, M.R.C.V.S., Audrey Jean Wells, M.R.C.V.S., Peter Albert Laing Wight, M.R.C.V.S., D.V.S.M.

Doctor of Philosophy (Ph.D.).—In the Faculty of Medicine: William Alastair Greig, B.SC., M.R.C.V.S. Thesis: "Calcium carbonate as a dietary supplement: its effect on soft tissues, with special reference to erythropoiesis."

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DEGREES CONFERRED BY THE NATIONAL UNIVERSITY OF IRELAND

At a meeting of the National University of Ireland, held on July 11th, 1953, the following were among the degrees conferred:—

Master of Veterinary Medicine

W. Kelly, P. Mullaney.

Bachelor of Veterinary Medicine

E. Carolan, *G. Gallery, *T. Hurley, R. Johnson, M. McGinley, *C. O'Connor, D. O'Rourke, *J. Keane.

*(*in absentia*).

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ROYAL COLLEGE OF VETERINARY SURGEONS

Membership Examinations, June/July, 1953

List of Successful Candidates

(*Continued from page* 461)

Glasgow (*continued*)

Third Examination:

Loudon, A. J. B. Martin, Miss Heather

Liverpool

Third Examination:

Shaib, Bukar

Final Examination:

Grainger, K. J. Kiernan, N. S.
Hedger, R. S.

London

Second Examination:

Physiology only

Baxter, C. J. Melluish, H. K.
Blaxland, D. R. Prole, J. H. B.
Cameron, R S. Stevens, H. R.
De Marigny, M. J. C. D. Whitaker, D. L.
Gray, C. G.

Anatomy (including Histology)

Baker, K. P. Jones, C. R. V.
Barnett, K. C. Kinnear, C. S.
Blackmore, D. K. Lawrence, B. T.
Bruford, J. C. Mason, J. A.
Butler, B. C. Mullen, P. A.
Chappell, L. A. Nelson, E. P.
Clark-Lewis, A. Y. Nettleton, L. B.
Cocks, Edwin Newey, R. M.
Cook, W. E. R. Noordin, B. K. M.
Davies, Miss G. M. Oakley, G. A.
Edgar, R. K. Oke, M. A.
Giles, H. G. Osman, Bin Din
Gill, E. A. Prasad, A. K. (credit)
Girling, Miss M. J. Ranger, M. J.
Greenwood, Ronald Swayne, T. C. B.
Hine, J. M. Teale, M. L
Hollands, J. G. (credit) Volrath, J. P.
Hudson, M. R. Wells, B. T.

THIRD EXAMINATION:

Hygiene only

Brazier, J. F. H.
Cullen, C. S.
Davidson, H. M.
Hardwick, A. G.
Keeling, M. D.
Nelson, G. J.
Thomas, C. J.
Thursby-Pelham, R. H. C.
Vinson, M. A.
Waller, J. F.
Walter, A. J.

Pathology only

Abdel-Baki, Y. Z.
Abraham, B. F. (credit)
Ansell, R. H.
Ashoub, M. A. R.
Asthana, S. V. S.
Baldwin, I. J.
Barton, C. R. Q.
Beesley, C. J. (credit)
Benbow, G. M.
Breeze, J. L.
Brocklesby, D. W.
Buxton, Peter
Bywater, J. E. C.
Dommett, D. J.
Downes, J. E.
Epps, H. B. G.
Fry, N. C. V.
Gibson, F. E. T.
Hammond, Miss W. M.
Hampshire, F. J. W.
Holmes, R. G. (credit)
Keep, M. E.
King, D. K.
Levens-Ing, Miss P. J.
Loving, Charles
McVoy, K. I.
Maynard, H. M. F.
Mears, R. H.
Nelson, D. G.
Nestel, B. L. (credit)
Olorenshaw, P. H.
Simpson-White, P. H.
Tiffin, R. B.
Vinycomb, Miss H. M.
Waterlow, Miss J.
Wells, J. R.
White, R. C.
Wilkins, G. T.

FINAL EXAMINATION:

Berry, D. M.
Biggs, P. M.
Bloomberg, J. H.
Box, P. G.
Carter, H. E.
Carter, J. B.
Clay, Daniel
Dickens, P. S. E. M.
Evans, J. M. (S)
Fell, B. F.
French, P. J.
Froyd, Gerald
Hall, S. A.
*Haxby, D. L.
Hooker, Miss P. M. W.
Jones, M. D. B.
Jordan, A. N. (M)
Keywood, E. K.
Kirby, M. A.
Lane, D. R. (M)
Larkin, P. J.
Malone, J. C.
Manton, V. J. A.
Martin, H. T. W.
Menard, F. R. J. R.
Morris, A. D.
Neal, N. W.
Pepper, R. T.
Rabbich, P. D.
Rawlins, J. A.
Reid, J. H.
Richards, M. A.
Rodgers, M. J.
Russell, G. P.
Smith, G. R.
Smith, P. L. F.
Stear, R. T. (S)
Thomas, J. L.
Townsend, G. H.
Walker, Miss G. M.
Walter, W. H.

* denotes Second Class Honours.
(M) denotes Credit in Medicine.
(S) denotes Credit in Surgery.

Edinburgh

SECOND EXAMINATION:

Beech, J. A.
Brown, Miss D. D.
Brunton, A. S. (P)
*Camden-Smith, M. J.
Cameron, D. C. K.
Clark, Miss N. D.
Cribb, P. H. (H)
Easingwold, D. E.
Harkness, Michael
Hastie, Hamish (H)
Imlah, Peter
Ironside, J. B. R.
Jones, J. H. (H)
Kettles, A. S.
Lamont, P. H. (P)
*Lawrence, J. A.
Leitch, I. D. C. M.
Macdonald, D. C.
McFerran, J. B. (P)
Matthews, R. G.
Miller, J. K. (H)
Morrish, J. S. H. (H)
Nyun, Mya (H)
Pratt, G. A.
Rowland, A. C. (P)
Sedgwick, J. R. W.
Stephens, M. B.
Stone, M. W.
Todd, R. H.
Tordoff, M. B. (H)
Wastie, Miss P. C.
Watt, R. D.
Whitmore, M. M.
Wilson, G. A.

* denotes Second Class Honours.
(P) denotes Credit in Physiology.
(H) denotes Credit in Histology.

THIRD EXAMINATION:

Baird, J. S.
*Barnes, Miss P. C.
Barr, T. R. B. (H)
Borthwick, Ramsay (P) (A)
Cathcart, R. A. (H)
Christie, R. F.
Couttie, Peter (A) (H)
Cuthbertson, J. L. H.
Dickson, James (A)
Edwards, Miss M. E. (A) (H)
Findlay, C. R. (H)
Forsyth, D. W.
Garden, Sigurd
Gripper, J. N.
Haith, C. F. (A) (H)
Irving, Miss P. M.
Jones, D. F. (H)
Kay, H. R. M. (A) (H)
Kirkbride, L. M.
*Levack, Miss M. E. S.
Muirhead, R. H.
Murphy, O. M. G. (H)
Paterson, R. C. G.
Pill, A. H.
*Podd, G. H.
Poole, Anthony (H)
Raditapole, N. N.
Shires, R. M.
Spence, J. B.
Steele, R. B. T. (A) (H)
Stokes, W. M.
Sutherland, I. H.
Teale, P. C.
Watt, I. M.
Weaver, A. D.
Williams, G. L.
Wittrick, D. A. (H)

* denotes Second Class Honours.
(P) denotes Credit in Pharmacology.
(A) denotes Credit in Anatomy.
(H) denotes Credit in Hygiene.

FOURTH EXAMINATION:

Archibald, D. R. N.
Baird, A. C.
Barlow, R. M. (Paras)
Cock, E. V.
Dakin, G. W.
Davidson, H. J.
Ferguson, A. R.
Fraser, Donald
Fraser, D. G.
Fraser, J. A.
Gould, C. M. (Paras)
Green, W. C.
Griffiths, T. G. G.
Hands, R. R.
Hayes, Hilton
Hunt, D. T. (Paras)
Hutton, P. H.
Jenkins, O. D.
Kermack, N. R.
Lal, G. S.
MacKay, A. F.
Marwaha, D. R.
Nelson, A. M. R.
Reid, G. S.
Scoggins, Miss J. M. T. (Paras)
Shannon, David
Sharratt, R. K.
*Siller, W. G.
Spencer, G. A. (Paras)
Stevenson, R. B.
Stewart, A. F.
Taylor, A. R.
Vizard, J. P.
Walker, A. I. T.
Watson, Michael
Wetherill, G. D.
Windsor, Miss M. D. (Paras)
Wright, David (Paras)

* denotes Second Class Honours.
(Paras) denotes Credit in Parasitology.

FINAL EXAMINATION:

Adamson, J. D. (M)
Affleck, Harry
Barker, A. M.
Barnes, Joseph
Bowie, J. T.
Browne, V. A. D.
Campbell, R. J. (M)
Cartwright, C. F.
Couttie, M. A.
Dovey, J. S. (M)
Drake, T. J.
Eddy, Cecil
Edgar, James
Fuller, A. T. (M)
Garrett, T. R.
Gilling, Mrs. J. P.
Gourlay, R. N.
Griffiths, B. C. R.
Hamilton, W. W.
Harrington, J. L.
Harrison, A. F.
Inness, J. F.
Jacob, M. B.
*Le Cheminant, D. A.
Lyon, Miss E. C. M.
Mackie, W. L.
MacLeod, Peter (M)
Mindel, J. B.
Nelson, J. P.
*Norman, T. H.
O'Reilly, K. J.
Patel, M. R.
Proverbs, R. S.
Roberts, A. W.
Ross, I. I.
Scales, Philip
*Sellers, R. F.
Smith, V. W.
Stewart, D. L.
Thoma, J. W.
Vasey, H. F.
*Wells, Miss A. J.
Wilson, P. G. R.

* denotes Second Class Honours.
(M) denotes Credit in Medicine.

* * * * *

WEEKLY WISDOM

The red clover seed crop depends on old ladies. Old ladies keep cats; cats eat mice; mice eat bumble bees and only bumble bees can fertilize red clover.—From "The Estate Magazine," July, 1953.

MYXOMATOSIS VIRUS RIDDING EAST AUSTRALIA OF RABBITS

Dr. Ian Clunies Ross, Director of the Commonwealth Scientific Industrial Research Organisation, told a conference of interested organisations (says *The Times*) that the imported virus myxomatosis had destroyed four-fifths of the rabbits in eastern Australia with a big resultant increase in primary production. This, last season alone, could be valued at more than £A.50,000,000.

The C.S.I.R.O. is now studying the problem created by the increasing proportion of rabbits recovering from the disease, which, although not yet significant, might become an important factor in the future. Sir Macfarlane Burnet, the leading Australian authority on virus diseases, told the conference that the fact that strains of virus with lower killing power had been encountered in some areas meant, at the worst, that myxomatosis would produce a 90 per cent. kill, whereas the original virus had a killing power of more than 95 per cent.

* * * * *

AREA ERADICATION PLAN FOR TUBERCULOSIS

Statement showing the Number of Cattle in each County on June 4th, 1952, and the Number of Cattle in Attested Areas and Attested Herds on June 30th, 1953

(Counties constituting, or included wholly or partly in, an Attested Area are marked A.A.)

1. For convenience, the figures in the attached statement for the number of cattle on June 30th, 1953, in counties constituting a separate Attested Area or included wholly in an Attested Area, are shown as corresponding with, instead of varying slightly from, the number of cattle on June 4th, 1952.

2. The number of Attested Herds on June 30th, 1953, was as follows :—

England	..	50,475
Wales	..	27,999
Scotland	..	25,585
		104,059

3. In addition, there were 2,879 Supervised Herds containing over 97,000 cattle. These herds need only one clear tuberculin test in order to qualify as Attested Herds.

	Total cattle, June 4th, 1952	Cattle in Attested Areas and Herds		
		Number	Percentage of total cattle	
England				
Bedford	46,639	13,360	28·6	
Berkshire	90,473	54,360	60·0	
Buckingham	115,448	41,370	35·8	
Cambridge	32,540	11,440	35·1	
Isle of Ely	22,187	2,000	9·0	
Chester	242,319	74,300	30·6	
Cornwall	268,120	71,280	26·6	
Isles of Scilly ..	516	516	100·0	A.A.
Cumberland	227,896	153,660	67·4	
Derby	183,577	39,870	21·7	
Devon	404,895	136,480	33·7	
Dorset	159,494	83,560	52·4	
Durham	116,500	40,810	35·0	
Essex	126,467	58,260	46·4	
Gloucester	195,604	77,360	39·5	
Hampshire	156,605	83,990	53·6	
Isle of Wight	22,072	11,580	52·5	
Hereford	133,654	47,420	35·5	
Hertford	62,242	30,590	49·1	
Huntingdon	30,150	5,600	18·6	
Kent	122,872	49,410	40·2	
Lancaster	272,237	91,010	33·4	
Leicester	168,250	34,540	20·5	
Lincoln (Holland) ..	29,413	1,620	5·5	
Lincoln (Kesteven) ..	73,428	11,110	15·1	
Lincoln (Lindsey) ..	169,545	19,520	11·5	
London	—	—	—	
Middlesex	8,085	2,920	36·1	
Norfolk	202,389	66,630	32·9	
Northampton }	149,615	30,240	19·2	
Soke of Peterborough }	6,981			
Northumberland ..	201,442	42,470	21·1	
Nottingham	114,555	20,950	18·3	
Oxford	109,773	49,500	45·1	
Rutland	20,386	1,550	7·6	
Salop	276,262	85,520	31·0	
Somerset	321,916	142,730	44·3	
Stafford	232,043	43,570	18·8	
Suffolk, East	82,634	34,220	41·4	
Suffolk, West ..	40,377	18,170	45·0	
Surrey	54,539	29,890	54·8	
Sussex, East	107,502	42,780	39·8	
Sussex, West	79,565	40,470	50·9	
Warwick	149,494	43,270	29·0	
Westmorland	96,136	80,560	83·8	
Wiltshire	209,293	101,090	48·3	
Worcester	98,843	27,480	27·8	
York, E. Riding ..	138,832	12,160	8·8	
York, N. Riding ..	252,285	72,880	28·9	
York, W. Riding ..	342,966	99,710	29·1	
Total	6,769,056	2,333,776	34·5	
Wales				
Anglesey	54,120	19,200	35·5	
Brecon	46,455	31,880	68·6	
Caernarvon	58,768	34,550	58·8	
Cardigan	79,710	79,710	100·0	A.A.
Carmarthen	139,567	139,567	100·0	A.A.
Denbigh	101,736	49,050	48·2	
Flint	60,914	17,130	28·1	
Glamorgan	73,453	26,340	35·9	
Merioneth	40,083	33,550	83·7	
Monmouth	67,978	22,830	33·6	
Montgomery	96,249	67,910	70·6	
Pembroke	103,298	83,030	80·4	A.A.
Radnor	36,096	19,310	53·5	
Total	958,427	624,057	65·1	
England & Wales :				
Total	7,727,483	2,957,833	38·3	
Scotland				
Aberdeen	216,248	50,720	23·5	
Angus	65,432	22,670	34·6	
Argyll	60,597	45,267	74·7	A.A.
Ayr	155,152	155,152	100·0	A.A.
Banff	53,682	11,920	22·2	
Berwick	35,317	13,130	37·2	
Bute	11,398	11,398	100·0	A.A.
Caithness	26,691	7,900	29·6	
Clackmannan	4,384	3,180	72·5	
Dumfries	105,140	105,140	100·0	A.A.
Dunbarton	17,755	15,630	88·0	
East Lothian	17,168	6,510	37·8	
Fife	64,932	40,650	62·6	
Inverness	50,370	27,830	55·2	
Kincardine	39,388	9,930	25·2	
Kinross	9,294	5,630	60·6	
Kirkcudbright ..	76,130	76,130	100·0	A.A.
Lanark	94,305	83,420	88·5	
Midlothian	24,161	15,390	63·7	
Moray	29,128	11,560	39·7	
Nairn	8,783	3,480	39·6	
Orkney	48,379	17,080	35·7	
Peebles	11,488	10,440	90·9	
Perth	89,524	35,380	39·5	
Renfrew	30,651	30,651	100·0	A.A.
Ross-shire	38,623	16,910	43·8	
Roxburgh	36,744	14,990	40·8	
Selkirk	6,249	4,220	67·5	
Stirling	41,048	32,110	78·2	
Sutherland	9,068	6,650	73·3	
West Lothian ..	16,037	10,810	67·4	
Wigtown	75,363	75,363	100·0	A.A.
Zetland	7,021	7,021	100·0	A.A.
Total	1,575,650	984,262	62·5	
Great Britain :				
Total	9,303,133	3,942,095	42·4	

* * * * *

ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax:

Bucks.—Manor Farm, Little Missenden, Amersham (July 11).
Lancs.—Withinreap Farm, Longridge, Preston (July 11).
Norfolk.—Hall Farm, Weasenham, King's Lynn (July 14).
Yorks.—Crowtrees Farm, Silsden, Keighley (July 11).

Fowl Pest:

Cambs.—The Mills, Cambridge Road, Waterbeach, Cambridge (July 15).
Cornwall.—Watergate Farm, Advent, Camelford (July 15).
Glos.—Bulk Farm, Ozleworth (July 15).
Isle of Ely.—Avondale, Witchford Road, Ely (July 16).
Leics.—Church Farm, Wallham-on-the-Wolds, Melton Mowbray, and Groby Park Farm, Markfield, Leicester (July 14).
Salop.—Old Gritt Farm, Shelve, Minsterley (July 14).

Swine Fever:

Cornwall.—Porth Veor, Porth, Newquay (July 13); Plashford Farm, Sandplace, Looe; Uphill, Bathpool, Launceston (July 18).
Derbys.—53, High Street, Newhall, Burton-on-Trent (July 13).
Essex.—Berwick Hall, Toppesfield, Halstead (July 13); Belmont Poultry Farm, Stapleford Abbotts (July 16); Old Manor Way Piggeries, Near Old Sewerage, Grays (July 20).
Glos.—High Street, Wickwar, Wotton-under-Edge (July 16).
Hants.—Newman Farm, Old Alresford, Alresford (July 15); Potteries Poultry Farm, Potteries Lane, Mychett, Aldershot (July 16).

Herts.—Wallington Lodge Farm, Baldock (July 15).
Kent.—Kent Tor, Wrotham Road, Culverstone, Meopham; Bedford Road, Northfleet, Gravesend (July 15); Rosemary, Southfields Road, West Kings Dawn, Sevenoaks (July 20).
Lancs.—Gartside Farm, Sunnyside Lane, Draylsden (July 14).
Lincs.—Main Road, Stickney, Boston (July 16).
Middlesex.—117, Sutton Lane, Hounslow (July 18).
Norfolk.—Runton Road, Cromer; The Nursery, Blickling, Aylsham (July 13); Pye's Mill, Loddon, Norwich (July 17); Bridge House, Horstead (July 20).
Northants.—Camp Hill Farm, Camp Hill, Bugbrooke; The Log Cabin, Gayton Road, Blisworth (July 14).
Notts.—Duke Street, Sutton-in-Ashfield (July 20).
Oxon.—Chasewoods Farm, White Oak Green, Hailey (June 18).
Salop.—Clifton Villa, Ford (July 16).
Staffs.—Yarlet Hall Farm, Yarlet (July 14.)
Suffolk.—Inglesbrook, Red Lodge, Freckenham, Bury St. Edmunds (July 14); Kiln Farm, Lickinghall, Diss (July 16); Walnut Grove, Holywell Row, Maidenhall (July 20).
Surrey.—Devonshire Road, Wallington (July 16); Ruett's Farm, Ellen's Green, Ewhurst (July 20).
Worcs.—Rectory Farm, Wordsley, Stourbridge; Swinesherd, Spetchley, Worcester (July 13).
Yorks.—Hull and Barnsley Gardens, Stoneferry Road, Hull; Old Hall, Anlaby, Hull; 65, South Parade, Asset (July 16); West End, Pollington, Nr. Goole; Fern Lea, Kirkby Malzeard, Ripon (July 17).

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PLANS FOR COMBATING FOOT-AND-MOUTH DISEASE IN EUROPE

The representatives of nine European countries, including Britain, who, as reported in our issue of last week, have been discussing at the Food and Agriculture Organisation headquarters in Rome the co-ordination of plans for combating foot-and-mouth disease in Europe, ended their meeting by agreeing on a constitution for a European commission on the control of the disease. Most of the delegates, it was stated, considered the constitution acceptable to their Governments.

Although 10 European countries have already agreed in principle to the terms of a constitution worked out by FAO, the Governments, in order not to delay active operation of the commission, are being asked to empower their delegates to the general conference of FAO in November next to deposit formal instruments of adherence to the constitution, so that it could come into force not later than January, 1954.

The commission is to operate on a budget of $50,000 a year. This is stated to be a negligible sum "in view of the fact that the last outbreak of foot-and-mouth disease in 1951-52 cost Europe an estimated $600,000,000." Under the constitution each member country undertakes to carry out internal measures of control, but, it is pointed out, even so the financial saving to each member made possible by mutual assistance on a regional scale will be very great.

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A.D.R.A.: WORK AT MOREDUN INSTITUTE

In his report to the annual meeting of the Animal Diseases Research Association, held at the Moredun Institute on July 15th, Dr. J. Russell Greig, C.B.E., M.R.C.V.S., the director, said that progress had been satisfactory. The activities of the biochemical department were mainly concerned with the metabolic disorders of cattle and sheep, while the departments of virology and bacteriology were pursuing research on the two major problems of scrapie and enzootic abortion.

Since the cause of scrapie had been determined as a virus, the primary objects had been the attainment of an effective preventive vaccine and/or a reliable diagnostic blood test by which latent cases of the disease could be revealed. The problem had proved a difficult one, and they had now enlisted the help of the Agricultural Research Council.

Research on the problem of enzootic abortion in ewes was progressing very well, and in the autumn of 1952 over 66,700 doses of vaccine were issued for test in the field. The available figures indicated that, as the result of vaccination, the incidence of specific ewe abortion had been reduced to about one-tenth of the normal incidence in unvaccinated flocks. This meant that the vaccine was not yet 100 per cent. effective, but it would seem that it was approaching that ideal, and, further, as the result of last year's work, methods had been evolved by which there was reason to believe that the cost of vaccine production could be very considerably reduced. "I believe," added Dr. Greig, "that I am justified in stating that there are now good prospects that the disease will be effectively controlled." Dr. Greig also referred in his report to the fact that during the past two years or so visitors had come to the Institute from 22 other countries, indicating the breadth and importance of their work. Dr. J. Allan Campbell, who will be in charge of the new parasitology department (on the construction of which work has begun) addressed members on some features of the research they would be undertaking. Parasitology, he said, had been a relatively subordinate subject in veterinary work, but it was of considerable importance, and he was therefore grateful for the opportunity to develop the field. Although *ad hoc* parasite control projects would not form the basis of their work, they would be investigating, among other things, biting flies in Scotland, dung organisms, and the effect of DDT and other chemicals on ticks.

Mr. George G. Mercer, who presided, was re-elected President, and Mr. Alex. McCallum re-elected Vice-President of the Association.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

SWINE FEVER—REGISTERED VACCINATED HERDS SCHEME

Sir,—There are implications in this scheme which should be fully realised, for if its promoters get away with it, others will follow and further depress the general practitioner's standard of living until he is fettered beyond hope of release.

The opinion that we are adequately rewarded with fees 30 to 50 per cent. above the 1938 level bodes us no good and will, if unchecked, eventually lead to complete subjection.

The N.F.U. heirarchy needs forceful reminding that when, 20 years ago, we obtained a net fee of 1s. a head for vaccinating pigs against erysipelas, the farmer paid his workers 30s. a week. Now that their minimum wage has been raised to £7, the veterinary surgeon is to consider himself recompensed at 2s. and 1s. 6d. a head. If this is our Council's idea of negotiation, and their timidity is tolerated, the profession is indeed in a parlous state.

Deprecation of the title "Vet." is a recurrent theme; veterinary surgeon being so much more professional, we are told. Now to live and have one's being as a professional man depends largely on the value of the fees one can command. The descent to inoculations at 2s. and 1s. 6d. a head will colour the layman's estimation of the value of a veterinary surgeon's services, to say nothing of the overalls we send to the laundry with visible proof of our blue-bloodedness after these excursions.

The sole advantage, perhaps, of conducting a practice at a low rate of fees is that the volume of work entailed in winning the income commensurate with a professional man's standing in the community tends to snuff him out in his fifties; so that he need take no heed for the morrow of old age. He will lay up little treasure for himself in the feedom of the florin; and the practitioner's pension comes over the post office counter, if he survives to draw it. As for his dependants, if unfitted for gainful employment the State will ensure that they do not starve.

Paragraph 8 with its bow to privilege is an affront to democratically-minded people. When I publish in our local newspapers a public notice saying "Crystal violet vaccine is now being sold to farmers for immunising their pigs against swine fever. For further particulars apply to your local veterinary surgeon," the chagrin of enquirers on learning that this particular provision is not intended for such as they will find public expression, until finally the pampered quarry is run to earth under the Treasury bench.

No mileage allowance. Are then the swine to be crated and brought to our premises; is it imagined that petrol flows freely and without purchase into the tank of the car left us by Father Christmas: or is the practice required to subsidise the pig-breeder, who sells his weaners at £5 to £7 instead of the thirty-odd shillings of 15 years ago?

What is there to be afraid of? The G.P. is in a strong position in that only he can perform economically the intimate dove-tailing called for in a general practice His panel services cost the State less than would a whole-time staff large enough to cover the work at its peak; and kick its heels in semi-idleness when disease is dormant.

There are poor fish in every profession, but when we are exhorted to conduct ourselves professionally yet accept any miserly fee arbitrarily fixed for us, it is time to call a halt.

Nothing will induce me to operate the scheme at the fees shown; and I shall not be the only one to by-pass it. I shall continue to vaccinate the pigs of my clients on request, at my ruling fees and not below—scheme or no scheme. If subjected to what I consider unfair competition, I shall give clients the option of purchasing CVV, syringe and needles at cost price under "general veterinary advice," with notes on allergy and first-aid thrown in.

"Say not the struggle naught availeth."

—Yours faithfully, N. F. Pollock, Long Planting, West Runton, Cromer, Norfolk. *July 13th*, 1953.

. . . . .

Sir,—May I through your columns hasten to the support of Mr. Waddington and offer him congratulations for putting in print what so many of us have been thinking for so long.

You say, Sir, that the questions which Mr. Waddington asks were dealt with at the joint meeting of the Lincolnshire and Eastern Counties Divisions on July 7th and again at the Council meeting of the Association held on July 9th. Would it not be possible for the answers given to be made known to the entire profession at once—for many of us are unable to attend Divisional meetings held far away from our practices and the ways of the Council, B.V.A., are, as Mr. Waddington suggests, apparently shrouded in mystery.*

Mr. Waddington mentions "Amateur diplomacy, smooth talking and hypocritical considerations of the 'good of the country'"—these three things can be very aptly summed up in a more succinct expression and if a spokesman of the B.V.A. is prepared to answer all Mr. Waddington's queries in *The Veterinary Record* then I can only recall a rather delightful Canadian phrase "Spread it thin Mister. You've got a large field to cover."—Yours faithfully, Roger Massey, 91, London Road, Chelmsford, Essex. *July 13th*, 1953.

[*Our correspondents and other readers are referred to the note on this matter published on page 475 of this issue.—*Editor*].

. . . . .

Sir,—Mr. F. G. Waddington's letter to *The Veterinary Record* (July 11th) "Swine Fever (Crystal Violet Vaccine)" should be of interest to all practitioners. I have, this very day, in a thundery, humid, close atmosphere, inoculated some 200 pigs, with the loss of much sweat, incredible contamination of overalls, and a shocking increase in rhetoric. Not surprisingly I find much meat in Mr. Waddington's observations. Many of the profession have, of course, no dealings or interest in the pig industry. The questions raised should, however, be noted, as a certain amount of principle is involved.

The point which stands out in Mr. Waddington's letter is that the officers of the B.V.A., without previous reference to members and apparently despite objection by interested Divisions, have decided to bring forth a scheme in collaboration with the N.F.U. Admittedly we cannot criticise a scheme until it is "revealed," as the newspapers say. By then, however, it will be a *fait accompli* whether it is acceptable or not! One is reminded of the institution of the Calf Vaccination Scheme. Objections were raised, but it was too late—all was arranged for the great benefit of the farmer and the country as a whole, but certainly to the financial detriment of the practitioner.

It would be well, therefore, for those involved in the discussions to bear prominently in mind that the N.F.U. undoubtedly have as their primary objective the cutting of the professional fee. The officers of the B.V.A. are elected to guard our interests. We look to them to do so and assuredly this must include our financial recompense in any scheme for which they are responsible.

It may be that some practitioners have been too high in their estimation of a suitable fee. Any scheme, if scheme there must be, would bring those members into line. My charge is 4s. for small and 6s. 6d. or 7s. for large pigs, plus a regular mileage fee. Since *Hansard's* revelations I have asked my clients if they considered this reasonable and by and large they are well pleased. One response to my enquiry from a client whose sole occupation is pig rearing was illuminating—"Mr. Butler would have it otherwise and I have an easy mind!" I would have grave doubts on the economics of carrying out the work at a lower fee. At the outset, I and others gave considerable thought to the matter and arrived at these figures as fair to the practitioner and fair to the farmer.

In my opinion this is the right approach to such matters, and, furthermore, it works. Finance apart, the practitioner and the client must have a mutual respect for each other, and when this exists, schemes and plans are rarely necessary.

With respect, Sir, your reassuring note appended to Mr. Waddington's letter is a perfect example of parliamentary prevarication. The bulk of the profession are still behind an Iron Curtain.

One can but trust that those engaged in the elaboration of the scheme or plan—either word has an odious ring to me—are (a) strong men, (b) fully *au fait* with the high running costs of practice to-day, (c) personally experienced in the delightful nature of the work entailed, and (d) mindful that we are a profession, albeit some of us work among swine.—Yours faithfully, Ronald F. Hall, 24, Stafford Street, Edinburgh, 3. *July 18th*, 1953.

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TREATMENT OF GLANDERS

Sir,—A short abstract appears in *The Veterinary Record* of May 30th last entitled "Glanders, A New Method of Curative Treatment." The abstract deals with a report of work done by the staff of the Veterinary Department in Iran. A high percentage of cures in horses is reported, apparently based on negative results of I.P.D. tests. One wonders if in some of these cases a loss of sensitivity might not follow repeated testing carried out for several months, and, therefore, not necessarily indicate a complete cure. There does, however, appear to be little doubt that sulphadiazine and sulphamethazine have a favourable effect on the clinical course of the disease.

Work on similar lines has been carried out by the Veterinary Department in Turkey. Guinea-pigs were included in the experiments and a number of human cases were treated. Some of the results indicated that when treatment was commenced soon after infection occurred a cure could be expected.

During 1952 at the Veterinary Laboratory, Baghdad, we treated three reacting horses. Treatment was given daily for one month. The general condition of the animals improved considerably but the I.P.D. reaction persisted in each case for a month following the cessation of treatment. The animals were then killed and a very few chronic lung lesions were noted in each case. Material from the lesions was inoculated into guinea-pigs. The Straus test was negative in each case nor were any lesions demonstrable on subsequent *post-mortem* examination of the guinea-pigs.

In the eradication of the disease from horses, presuming the treatment does limit the spread of the disease in the animal body and perhaps effect some cures, the persistence of the I.P.D. reaction even for a time would appear to create a serious difficulty in those many countries which have adopted a test and slaughter policy.—Yours faithfully, Frank H. Manley, Professor, Department of Bacteriology, Alabama Polytechnic Institute, Auburn, Alabama.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Fowl Pest	Sheep Scab	Swine Fever
1st to 15th June, 1953	19	—	96	—	153
Corresponding period in—1952	19	63	5	—	31
1951	14	—	6	—	55
1950	14	1	8	—	
1st January to 15th June, 1953 ...	414	25	373	—	1,623
Corresponding period in—1952	262	365	114	1	530
1951	250	18	476	4	428
1950	199	14	81	19	8